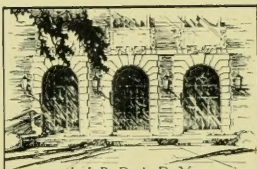


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NATURAL

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ENGLISH BOTANY.



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ENGLISH BOTANY;

OR

COLOURED FIGURES

OF

BRITISH PLANTS.

EDITED BY JOHN T. BOSWELL, F.L.S., ETC.

LATE LECTURER ON BOTANY AT WESTMINSTER HOSPITAL.

THE POPULAR PORTION BY MRS. LANKESTER,

AUTHOR OF "WILD FLOWERS WORTH NOTICE," "THE BRITISH FERNS," ETC.

THE FIGURES BY

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AND

JOHN EDWARD SOWERBY,

ILLUSTRATOR OF THE "FERNS OF GREAT BRITAIN," "GRASSES OF GREAT BRITAIN,"

"WILD FLOWERS WORTH NOTICE," ETC. ETC.

Third Edition.

ENLARGED, RE-ARRANGED ACCORDING TO THE NATURAL ORDERS,

AND ENTIRELY REVISED.

WITH DESCRIPTIONS OF ALL THE SPECIES BY THE EDITOR.

VOL. V.

COMPOSITÆ.

LONDON:

GEORGE BELL & SONS, YORK STREET, COVENT GARDEN.

1878.

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS,
STAMFORD STREET AND CHURCH LANE.

ENGLISH BOTANY.

ORDER XLI.—COMPOSITÆ.

HERBS or under-shrubs, more rarely shrubs, with alternate or more rarely opposite or verticillate leaves, entire or more or less deeply divided, without distinct stipules. Flowers (*florets*) perfect or unisexual, sessile on a floret-receptacle (*clinanth*), in involucrate heads, popularly called compound flowers (*anthodes*). Leaves (*phyllaries*) of the involucre (*pericline*) resembling the sepals of a calyx. Calyx-tube adhering to the ovary, the limb frequently forming a pappus of numerous hairs, which increase in length in fruit; sometimes, however, the pappus consists of scales, sometimes there is merely a raised border round the top of the ovary, and sometimes the calyx-limb is obsolete. Corolla monopetalous, inserted on an epigynous disk, the tube of various length, often with the limb regular or nearly so (*tubular*); limb often 5-lobed, more rarely 4- or 3-lobed, or 2-lipped (*bilabiate*), or split down one side and resembling a ribbon (*ligulate*), rarely absent; sometimes the outer florets have ligulate corollas, forming a *ray* round the central tubular florets of the centre or *disk*. Stamens 5, rarely 4, inserted upon the tube of the corolla; filaments generally free above or entirely free, rarely monadelphous; anthers almost always cohering by their edges, and forming a tube which surrounds the style. Ovary inferior, 1-celled, crowned by an annular epigynous disk. Style terminal, bifid at the apex, with the lobes free or more or less cohering. Ovule solitary, erect from the base, anatropous. Fruit an achenium, often crowned by the remains of the calyx-limb in the form of a pappus. Clinanth naked, or clothed with hairs or scales (*paleæ*), rarely with polyphyllous involucels enclosing the florets.

SUB-ORDER I.—CYNAROCEPHALÆ.

Florets generally all tubular and perfect, the exterior florets rarely dissimilar to those of the disk, in which case the anthodes are radiant: when this does take place, the exterior florets are

generally tubular and neuter or (very rarely) female, or (which is only the case in exotic species) where the florets of the disk are male, those of the ray are ligulate and female. Style thickened below the point where it divides into two branches, the thickened part often hairy. Leaves and phyllaries often spinous; pericline usually globose or ovoid.

TRIBE I.—CARDUINEÆ.

Florets all tubular and perfect, each one not surrounded by an involucrel (rarely the anthodes are subdicocious by abortion). Anthers without basal appendages. Pappus of hairs united at the base, and falling off without separating from each other.

GENUS I.—ONOPORDUM. *Linn.*

Pericline of numerous imbricated entire phyllaries, with a bayonet-shaped point ending in a spine. Florets all equal, perfect. Filaments free and glabrous; anthers notched at the base, with two acute lobes at the base, and furnished at the summit with a linear-subulate appendage. Achenes obovate-ovoid, subtetragonal, laterally compressed, transversely rugose; epigynous disk small, not bordered. Pappus caducous, consisting of rough hairs, arranged in several rows, and united into a ring at the base. Clinanth fleshy, pitted, but without hairs, the pits surrounded by an elevated dentate margin.

Large herbs, generally biennial, with branched stems or rarely caulescent. Leaves pinnately lobed or toothed, with the lobes or teeth spinous, generally decurrent on the stem, which thus becomes winged, with the wings spinous-dentate. Pericline large, sub-globose, spiny. Flowers purple or purplish-rose, varying to white.

The name of this genus comes from the Greek word *ονος* (*onos*), an ass, and *περιω* (*perio*), I disperse wind, and the species are said to produce this effect in asses.

SPECIES I.—ONOPORDUM ACANTHIUM. *Linn.*

PLATE DCLXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXIII.

Stem erect, branched, winged to the top. Leaves decurrent on the stem, sinuate, spinous, whitish-arachnoid on both sides. Pericline globular, arachnoid, especially towards the base. Phyl-

laries spreading, bayonet-shaped, spinous-pointed. Corolla glabrous. Pappus pale brownish-red, twice as long as the achene.

By roadsides and in waste places, particularly in chalky and sandy soils. Not uncommon in England; rare and very doubtfully native in Scotland, where it occurs as far North as Fife.

England, Scotland. Biennial. Late Summer
and Autumn.

Stem 18 inches to 5 feet high, very stout, with wings broader than its own diameter. Radical leaves sessile, deeply sinuated; stem-leaves oblong-elliptical, less deeply sinuated than the root-leaves, their bases decurrent into the wings of the stem. Pericline $1\frac{1}{4}$ to 2 inches across, with very numerous green phyllaries clothed with white cobweb-like hairs and with a strong nerve excurrent into a yellowish spine. Corolla light purple. Stamens with the connective produced beyond the anther-lobes into a long tapering point. Achenes $\frac{1}{4}$ inch long, greyish-brown, marbled with black, transversely wrinkled. Hairs of the pappus clothed with smaller hairs directed towards the point. Plant hoary, the young leaves white.

Scotch Thistle.

French, *Onoperde Acanthe*. German, *Gemeine Krebs, Esels Distel*.

This Thistle is also called the Cotton Thistle from its downy appearance. The common name Thistle, which is applied to many other plants, is essentially the same word in all kindred languages, and comes from *pistel*, from *pydan*, to stab. This species is the national emblem of Scotland, and is one of the stiffest and most thorny of its race. It is the badge of the Stuarts, and its sharp spines well agree with Gerarde's description of the plant. He describes it as "set full of most horrible sharpe prickles, so that it is impossible for man or beast to touch the same without great hurt and danger." The origin of the Thistle as the national emblem is thus given by tradition.

"When the Danes invaded Scotland, it was deemed unwarlike to attack an enemy in the darkness of the night instead of a pitched battle by day; but on one occasion the invaders resolved to avail themselves of stratagem, and in order to prevent their tramp being heard, they marched barefooted. They had thus neared the Scottish force unobserved, when a Dane unluckily stepped his foot on a superb prickly Thistle and uttered a cry of pain, which immediately aroused the Scotch, who discovered the stealthy foe and defeated them with great slaughter. The Thistle was immediately adopted as the insignia of Scotland." The Order of the Thistle was revived or instituted A.D. 1540, by James V., who caused it to consist of himself as sovereign, and twelve knights, in imitation of Christ and the twelve apostles. In the then dawning Reformation, this imitation was considered irreverent, and the order was discontinued, but revived again by James the Seventh of Scotland and Second of England, who created eight knights, May 29th, 1687. The first Scottish coins on which the Thistle appears, are those of James V. The ancients supposed that this Thistle was a specific in cancerous complaints. The receptacle and young stems are

sometimes boiled and eaten as artichokes. The cotton is occasionally collected from the stem, and we have heard of pillows being stuffed with it. Gerarde tells us that Dioscorides saith—"That the leaves and roots hereof are a remedy for those that have their bodies drawn backwards; thereby Galen supposeth that these are of temperature hot."

GENUS II.—**SILYBUM.** *Vaill.*

Pericline of imbricated phyllaries, the exterior and middle ones dilated into a spinous-dentate foliaceous appendage, longly acuminate into a stout spine, interior ones entire without an appendage. Florets all equal, perfect. Filaments cohering so as to form a tube, papillose; anthers with a very short acuminate point. Achenes obovate-ovoid, laterally compressed, without raised lines; epigynous disk surrounded by a horny entire border. Pappus caducous, consisting of denticulate hairs arranged in several rows, and united into a ring at the base; the ring furnished at the upper border with a crown of minute smooth connivent hairs. Clinanth fleshy, not pitted, hairy.

Large biennial herbs with branched stems. Leaves amplexicaul, sinuate-spinous or spinous-dentate, generally glabrous, usually variegated with white. Pericline large, sub-globose. Flowers purplish-rose, varying to white.

The name of this genus comes from *σιλυβος* (*silubos*), a thistle-kind of plant which bore eatable sprouts.

SPECIES I.—**SILYBUM MARIANUM.** *Gaertn.*

PLATE DCLXXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCLXXXII.

Cardus Marianus, Linn. Hook. & Arn. Brit. Fl. p. 236. Benth. Handbook Brit. Bot. p. 313. Sm. Eng. Bot. No. 976.

Stem erect, branched. Leaves amplexicaul, with blunt half-kidneyshaped auricles, sinuated, spinous, glabrous on both sides, variegated with white above. Phyllaries concave, lanceolate, with recurved foliaceous spinous-pointed appendages with spinous margins; inner phyllaries entire, rough.

In waste ground and by old buildings, but probably not truly native. Not uncommon in England; rare in Scotland, where it occurs about Berwick, Dumbarton, Edinburgh, in Aberdeenshire and Forfarshire.

England, [Scotland], Ireland. Biennial. Late Summer and Autumn.

Stem 1 to 4 feet high, not winged, sulcate. Leaves (both the radical ones and those of the stem) generally deeply sinuated. Pericline ovate-globular, 1 to 2 inches across, with rather numerous large green phyllaries, the exterior ones with spreading appendages often 1 inch long, with the edges fimbriate-spinous, and the strong central nerve excurrent into a yellowish spine. Flowers purplish-crimson. Achenes $\frac{1}{4}$ inch long or more, black, often marbled with grey, finely transversely rugose. Pappus much longer than the achene, of pure white hairs, with very short hairs upon them. Leaves light-green, shining, conspicuously veined with white above.

Milk-Thistle.

French, *Silybe Chardon Marie*. German, *Gemeine Mariendistel*.

This beautiful plant, with its deep glossy green leaves and milk-white veins, is not unworthy of cultivation in the shrubbery or garden. In the days of monkish superstition, the milky veins were said to have originated in the milk of the Virgin Mary having fallen on them as she nursed the infant Jesus; hence it was called the "Holy Thistle," and "Our Lady's Thistle;" and the Latin name of the plant has the same derivation. "Dioscorides affirmed that the seeds being drunke are a remedy for infants that have their sinews drawn together, and for those that be bitten of serpents;" and we find in a record of old Saxon remedies, that "this wort if hung upon a man's neck it setteth snakes to flight." The stalks of the Milk-Thistle, like those of most of our larger Thistles, may be eaten, and are both palatable and nutritious. It is called pig-leaves in some country districts.

GENUS III.—CARDUUS. *Linn.*

Pericline of numerous imbricated entire phyllaries, often spinous at the summit, not scarious at the margin nor appendiculate. Florets all equal, regular, perfect, or sub-unisexual and sub-dioecious by abortion. Filaments free, hairy or denticulate; anthers prolonged at the apex into a linear-subulate scarious appendage. Achenes oblong-ovoid, laterally compressed, without raised lines; epigynous disk surrounded by an entire border; pappus caducous, formed of rough or plumose hairs, arranged in several rows and united into a ring at the base. Clinanth not pitted, hairy.

Herbs, often biennial. Leaves often spinous at the margins, and frequently decurrent on the stem. Pericline usually large, sub-globose or ovoid. Flowers purple or crimson, varying to white, rarely dull-yellow.

The derivation of the name of this genus of plants is difficult to determine. By some authors it is supposed to come from *χευρω* (*cheuro*), a technical verb denoting the operation of carding wool, to which process the heads of some of the species are applicable.

SUB-GENUS I.—EU-CARDUUS.

Hairs of the pappus not plumose (the hairs without conspicuous secondary hairs upon them).

SPECIES I.—**CARDUUS TENUIFLORUS.** *Curt.*

PLATE DCLXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCLXV. Fig. 1.

Billot. Fl. Gall. et Germ. Exsicc. No. 805.

C. pycnocephalus, *Benth.* Handbook Brit. Bot. p. 313 (non *Jacq.*).

Stem winged throughout. Radical leaves oblanceolate, blunt; stem-leaves decurrent, acute, both deeply sinuate-pinnatifid, spiny, with scattered hairs above, more or less sparingly arachnoid beneath. Anthodes aggregated at the summit of the stem, and branches sub-sessile or very shortly stalked. Pericline cylindrical-ovoid, glabrous; phyllaries adpressed, strapshaped-lanceolate, acuminate, shortly spinous-pointed, with the point curving outwards, the inner ones as long as or longer than the florets. Pappus not plumose.

In waste ground and by roadsides; preferring sandy situations and near the sea. Not uncommon in England and the South of Scotland as far North as Forfar and Fife. On the West coast it is not known to occur North of the neighbourhood of Glasgow.

England, Scotland, Ireland. Biennial. Annual.
Summer and Autumn.

Stem erect, 6 inches to 4 feet high, branched in large examples, with the branches making but a small angle with the stem. Radical and lower leaves much attenuated towards the base, with the terminal lobe transversely rhomboidal. Pericline $\frac{3}{4}$ inch long by $\frac{1}{4}$ broad; inner phyllaries scarious at the edges. Flowers pale purplish-pink. Achenes $\frac{1}{6}$ inch long, fawn-colour, shining, finely transversely rugose, the disk with a very prominent tubercle in the centre. Pappus much longer than the achene, pure white. Plant green, more or less hoary.

Mr. Bentham considers this plant identical with *C. pycnocephalus* of Linnaeus, a South European plant, which is probably distinct from the present plant only as a sub-species. It differs in having the heads larger, fewer together, on longer stalks, the pericline oblong-ovoid, the florets longer in proportion to the scales, and several other less obvious characters.

Slender-flowered Thistle.

French, *Chardon à fleurs menues.* German, *Schmalblättrige Distel.*

SPECIES II.—**CARDUUS NUTANS.** *Linn.*

PLATE DCLXXXIII.

*Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXVII.**Billot, Fl. Gall. et Germ. Exsicc. No. 2697.*

Stem slightly and interruptedly spinous-winged except at the top, where it is destitute of a wing and arachnoid. Radical leaves elliptical, attenuated at the base, sinuate-spinous; stem-leaves deeply doubly-pinnatifid-spinous, the upper ones strapshaped. Anthodes solitary, without leaves in their immediate vicinity, drooping. Pericline sub-globular, depressed at the base, arachnoid; phyllaries triangular-subulate, spinous-pointed, the outer and middle ones spreading-reflexed. Pappus of silky hairs, not plumose.

In waste places, particularly partial to chalky and limestone soils. Not uncommon in England; rare in Scotland, where it is confined to sandy sea-shores, and not found North of the counties of Edinburgh and Lanark.

England, Scotland, Ireland. Biennial. Summer
and Autumn.

Stem erect, 8 inches to 3 feet high, branched in large examples, with the branches spreading-ascending, furrowed, interruptedly winged, the wings ceasing at a considerable distance below the anthodes. Leaves undulated with scattered hairs on both surfaces. Pericline 1 to $1\frac{1}{4}$ inch across, nearly as broad as long. Flowers crimson, slightly longer than the phyllaries. Achenes brownish fawn-colour, shining, longitudinally striate, rugose only on the striæ; disk with a central depressed pentagonal tubercle. Leaves green, somewhat shining.

Musk-Thistle.

French, *Chardon Penché.* German, *Nickende Distel.*

This is one of our commonest Thistles on a dry soil, and may be known by its large drooping flowers and musky scent. The down of this, as of some other species, may be advantageously used as a material in making paper. The thistle-down is a favourite food of goldfinches.

SPECIES III.—**CARDUUS CRISPUS.** *Linn.*

PLATE DCLXXXIV.

*C. acanthoides, Sm. Eng. Bot. No. 973. Hook. & Arn. Brit. Fl. ed. viii. p. 236.**Benth. Handbook Brit. Fl. p. 313.*

Stem continuously spinous-winged throughout, and arachnoid at the summit. Radical leaves elliptical, attenuated at the base,

sinuate-pinnatifid; stem-leaves deeply doubly-pinnatifid, spinous, the upper ones narrower. Anthodes aggregated at the extremity of the stem and branches, rarely solitary, with leaves generally in their immediate vicinity, erect. Pericline subglobular-ovoid, rounded at the base, slightly arachnoid; phyllaries adpressed, strapshaped-subulate, spinous-pointed. Pappus of silky hairs, not plumose.

Var. α , *genuinus*. Gr. & Godr.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCLXXX. Fig. 1.

Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 460.

Leaves hoary-pubescent beneath. Anthodes aggregated. Pericline sub-globular.

Var. β , *polyanthemos*. Godr.

Reich. Ic. l. c., Fig. 2.

C. polyanthemos, *Koch*, Syn. Fl. Germ. et Helv. ed. i. p. 401.

C. multiflorus, *Gaudin*, Fl. Hel. Vol. V. p. 166.

Leaves green on both sides, pubescent on the veins. Anthodes aggregated. Pericline ovoid.

Var. γ , *litigiosus*. Gr. & Godr.

Reich. l. c., Tab. DCCCXXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2695.

C. acanthoides, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 459.

C. polyacanthos, *Schreb.* Fl. Lips. p. 15.

Leaves green on both sides, pubescent on the veins beneath. Anthodes sub-solitary. Pericline sub-globular.

In hedge-banks, borders of fields, and by roadsides. Common, and generally distributed in England; less so in Scotland, and absent from the extreme North of that country. Var. γ less abundant than the other forms.

England, Scotland, Ireland. Biennial. Late Summer and Autumn.

Stem erect, 1 to 4 feet high, branched, with the branches ascending, with narrow but very spinous wings, the upper portion at least pubescent. Leaves resembling those of *C. nutans*, but generally broader. Anthodes very variable in size, smallest when most numerously aggregated. Pericline $\frac{3}{8}$ to $\frac{5}{8}$ inch across, and $\frac{5}{8}$ to $\frac{3}{4}$ long, with the phyllaries rough at the edges, the inner ones sub-scarious, and purplish at the point, rather shorter than the florets. Florets purplish-erimson. Achenes brownish fawn-colour, shining, with rather indistinct longitudinal striæ, finely shagreened all over; central tubercle prominent, indistinctly 5-lobed. Plant

varying much in the degree of pubescence, and consequently in the green or whitish colour of the leaves.

Wetted Thistle.

French, *Chardon Crêpu.* German, *Krause Distel.*

This is one of the least troublesome of the Thistles, being annual and less abundant than some others.

HYBRID.*

CARDUUS NUTANTI-CRISPUS. *Sondl.*

PLATE DCLXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCLXXVII. Fig. 3.

Billot, Fl. Gall. et Germ. Exsicc. No. 2696.

C. acanthoides, *Gr. & Godr.* Fl. de Fr. Vol. II. p. 231.

C. "polyanthemus," Döll. Reinische Fl. p. 505."

Intermediate between *C. crispus* and *C. nutans*, and approaching sometimes the one parent and sometimes the other.

From *C. nutans* it differs in the more spinous wing to the stem, the smaller and less drooping or erect anthodes, the narrower and less spreading outer phyllaries, and in the leaves being usually slightly hoary beneath.

From *C. crispus* it is distinguished by the sub-solitary and sometimes slightly drooping anthodes, often without leaves in their immediate vicinity, the pericline more arachnoid, and by the broader and less adpressed phyllaries, the outer ones somewhat recurved.

It grows with *C. nutans* and *C. crispus* about Saffron Walden, from whence I am favoured with specimens by the Rev. W. W. Newbould. Professor Babington mentions it as if it were not uncommon; but I am not sure that he does not include *C. crispus*, var. *litigiosus*, under his *C. crispus*, β *acanthoides*.

SUB-GENUS II.—CIRSIUM. *Tournef.*

Hairs of the pappus plumose (the hairs clothed with secondary conspicuous hairs).

* Hybrids occur in the genus *Carduus* so frequently, that it has been considered advisable to give figures of those which are most likely to be met with.

SECTION I.—ERIOLEPIS. *Cass.*

Flowers perfect. Leaves rough with small subulate spines all over the upper surface.

SPECIES IV.—**CARDUUS LANCEOLATUS.** *Linn.*

PLATE DCLXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXVI.

Billot, Fl. Gall. et Germ. Exsicc. No. 3124.

Cirsium lanceolatum, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 452. *Gr. & Godr.*

Fl. de Fr. Vol. II. p. 209. *Fries*, Sum. Veg. Scand. p. 4.

Cnicus lanceolatus, *Willd.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 236.

Biennial. Stem elongated, branched, interruptedly winged. Radical leaves elliptical-ob lanceolate, attenuated at the base, subpetiolate, the earliest ones flat, lobed-pinnatifid, the later ones undulated, deeply-pinnatifid, the divisions spinous; stem-leaves decurrent, slightly undulated, pinnatifid; segments bifid, with the upper lobe of each pair usually toothed at the base and spinous, the lower one commonly entire; upper surface clothed with minute subulate spines, the lower one rough or more or less arachnoid-pubescent. Anthodes sub-solitary, or aggregated in pairs or threes at the extremity of the stem and branches. Pericline ovate-ovoid, slightly arachnoid; phyllaries adpressed, lanceolate, acuminate into a long bayonet-shaped spreading point, not ciliated at the margin nor dilated towards the apex, with a strong central nerve excurrent into a stout spine. Pappus plumose.

In waste places, by roadsides, in pastures, and cultivated ground. Very common, and generally distributed over the whole kingdom.

England, Scotland, Ireland. Biennial or Annual.

Late Summer and Autumn.

Stem 1 to 5 feet high, sulcate, more or less woolly with narrow spinous wings. Leaves with the segments elongated and palmately-cleft in large examples, but short and scarcely even bifid in weak specimens. Pericline 1 to $1\frac{1}{2}$ inch broad by 1 to $1\frac{1}{3}$ long. Phyllaries green, the outer ones with recurved tips, the inner ones scarious and not spinous-pointed, shorter than the florets. Flowers light crimson-purple. Achenes $\frac{1}{2}$ inch long, smooth, yellow streaked with black, with a prominent rounded tubercle in the centre of the disk. Pappus white, with the hairs feathery. Leaves dark dull-green above, paler beneath, where they are sometimes nearly white, when the arachnoid pubescence is abundant.

Specimens from Orkney have the under side of the leaves nearly as white as those of *Cirsium nemorale* of Reichenbach, which is doubtless merely an extreme variety of *Carduus lanceolatus*.

Spear-Thistle.

French, *Cirse Lancéolé*. German, *Lanzettliche Kratzdistel*.

Dr. Withering says,—“ Few plants are more disregarded than this, and yet its use is very considerable. If a heap of clay be thrown up, nothing would grow upon it for several years, did not the seeds of this plant, wafted by the wind, fix and vegetate thereon. Under the shelter of this, other vegetables appear, and the whole soon becomes fertile. The flowers, like those of the artichoke, have the property of curdling milk.”

SPECIES V.—**CARDUUS ERIOPHORUS.** *Linn.*

PLATE DCLXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXII.

Cirsium eriophorum, Scop. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 453. Gr. & Godr. Fl. de Fr. Vol. II. p. 211.

Cnicus eriophorus, Willd. Hook. & Arn. Brit. Fl. p. 237.

Biennial. Stem elongated, branched, not winged. Radical leaves attenuated at the base, petiolate, greatly undulated, pinnatifid; segments bifid, with both the lobes entire; stem-leaves semi-amplexicaul, not decurrent, similar to the radical leaves, but with the segments (at least in the upper ones) simple, upper surface with very minute bristle-like spines, under surface hoary. Anthode solitary at the extremity of the stem and branches, or more rarely aggregated in pairs. Pericline globose, copiously arachnoid, with short floral leaves at the base, which do not overtop the flowers; phyllaries adpressed, narrowly lanceolate, gradually acuminate into a narrow spreading point, which is slightly dilated towards the apex, ciliated at the margins, central nerve of the outer ones excurrent into a short stout spine. Pappus plumose.

On dry pastures and in waste places, particularly on chalk and limestone. Local. Distributed through the greater part of England; though probably not wild in the North. In Scotland, it occasionally occurs, but only where it has almost certainly escaped from cultivation.

England, [Scotland], Ireland. Biennial. Late Summer and Autumn.

Stem stout, furrowed, woolly, 3 to 5 feet high, corymbosely branched towards the apex. Lowest leaves very large, often 2 feet long; stem-leaves much smaller, all very deeply pinnatifid, with strapshaped lobes joined together in pairs in the lower ones,

or simple in the upper ones. Pericline $1\frac{1}{4}$ to 2 inches across or more, and of about the same length; phyllaries ciliated with reddish curled hairs on the point, which is reddish or green. Flowers light reddish-purple. Anthers dark-purple. Style white. Achenes yellowish-grey mottled with black, shining, smooth, with a small rounded tubercle in the centre of the disk. Pappus very long, of feathery hairs. Plant deep dull-green, pericline and under side of the leaves hoary with arachnoid pubescence.

Sometimes the points of the phyllaries are destitute of spines.

Woolly-headed Thistle.

French, *Cirse Laineux*. German, *Wollköpfige Kratzdistel*.

This Thistle is eaten when young as a salad. The young stalks, peeled and soaked in water to take off the bitterness, are excellent, and may be either boiled or baked in pies, after the manner of rhubarb. The scales of the cup are as good as artichokes. These properties in the Woolly-headed Thistle must be of recent discovery, for, to our surprise, we find our old friend Gerarde without a single suggestion as to their value. Contrary to his usual wont, he says: "Concerning the temperature and vertues of these thistles we can alledge nothing at all."

SECTION II.—ONOTROPHE. *Cass.*

Flowers polygamo-dioecious or sub-dioecious or all (?) perfect. Leaves without spines on the upper surface, but generally with distant hairs.

SPECIES VI.—*CARDUUS PALUSTRIS*. *Linn.*

PLATE DCLXXXVIII

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 1016.

Cirsium palustre, *Scop.* *Koch, Syn. Fl. Germ. et Helv.* ed. ii. p. 453. *Gr. & Godr.*

Fl. de Fr. Vol. II. p. 212. *Fries, Sum. Veg. Scand.* p. 4.

Cnicus palustris, *Willd.* *Hook. & Arn. Brit. Fl.* ed. viii. p. 236.

Biennial. Stem elongated, branched, spinous-winged. Radical leaves narrowly oblanceolate, petiolate, crenate lobed, bristly-spinous at the margins; stem-leaves decurrent, undulated, deeply pinnatifid, with the lobes usually bifid or trifid and spinous-toothed, with scattered hairs above, and more or less thinly arachnoid beneath. Anthodes sub-sessile, aggregated at the extremity of the stem and branches. Pericline ovoid, slightly arachnoid; phyllaries adpressed, lanceolate, the outer ones mucronate, the inner ones longer, strapshaped, subscarious and not spinous. Pappus plumose.

In meadows, marshes, and bogs, and by the sides of ditches. Very common, and generally distributed.

England, Scotland, Ireland. Biennial or Annual.

Late Summer and Autumn.

Stem stout, erect, furrowed, 1 to 5 feet high paniculately branched, with the branches much shorter than the main stem, spreading-ascending, narrowly winged, the wings with numerous long slender spines. Spines on the edges of the leaves similar to those on the wing of the stem. Pericline $\frac{1}{4}$ to $\frac{1}{2}$ inch across, by $\frac{1}{2}$ to $\frac{3}{4}$ long; outer phyllaries blackish-purple, inner ones bright-purple, except in the white-flowered states, when they are pale green. Flowers dark dull-crimson-purple. Achenes pale fawn-colour, sub-cylindrical, smooth, central tubercle cylindrical. Pappus rather short (about twice as long as the achene), dirty-white. Plant deep dull-green, the leaves sometimes slightly hoary beneath.

Marsh-Thistle.

French, *Cirse des Marais*. German, *Sumpf Kratzdistel*.

The stalks of this species of Thistle are said to be equally as good as those of the Milk-Thistle, and in Evelyn's time were similarly employed.

SPECIES VII.—**CARDUUS TUBEROSUS.** *Linn.*

PLATE DCLXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXXIX. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 804.

Cirsium bulbosum, D. C. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 456. Gr. & Godr. Fl. de Fr. Vol. II. p. 218.

Cnicus tuberosus, Willd. Sm. Eng. Bot. No. 2562. Hook. & Arn. Brit. Fl. ed. viii. p. 237.

Perennial. Rootstock "not stoloniferous" (Gr. & G.), with elliptical fusiform-cylindrical root-fibres. Stem erect, not winged, simple or slightly branched, with the branches very long, erect. Lower leaves attenuated into a petiole; stem-leaves sessile, semi-amplexicaul but scarcely auricled, not decurrent; all undulated, deeply pinnatifid, with the segments rather remote, 2-, 3-, or even 4-cleft, with the lobes elongated, diverging, spinous-ciliate, sub-glabrous beneath. Anthodes solitary, stalked, without leaves in their immediate vicinity. Pericline ovate-globular, depressed at the base, very slightly arachnoid; phyllaries adpressed, with a dorsal nerve in the upper part, the outer ones lanceolate, mucronate, the inner ones strapshaped, scarious and coloured at the tip. Pappus plumose.

In meadows and borders of woods? Very rare. Great Ridge-wood, near Boyton, Wilts, where, however, it has not been gathered for some years, the only living botanist who has found it being, I believe, Mr. T. B. Flower.

England. Perennial. Late Summer and Autumn.

Rootstock short, oblique, without stolons, but with most of the radical fibres thickened, narrowly fusiform, sometimes nearly as thick as the little finger. Stem slender, with few leaves, and these principally below the middle of the stem. Leaves varying considerably, but with the lobes of the segments of the lower ones diverging at a considerable angle, those on the basal side of the segment directed backwards. Pericline $\frac{5}{8}$ to $\frac{3}{4}$ inch across, by $\frac{3}{4}$ to 1 inch long, slightly narrowed towards the summit; outer phyllaries short, tipped with olive, the inner ones with dark-purple. Flowers dark-crimson. Florets much longer than the phyllaries; limb of the corolla longer than the tube. Achenes cylindrical-ovoid, pale fawn-colour. Pappus pure white, very plumose. Plant bright-green; leaves sometimes slightly hoary beneath.

Tuberous Thistle.

French, *Cirse Tubérent*. German, *Knollentragende Kratzdistel*.

SPECIES VIII.—**CARDUUS PRATENSIS.** *Huds.*

PLATE DCXC.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXXIX. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 2492.

Cirsium Anglicum, *Lam.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 456. *Gr. & Godr.*

Fl. de Fr. Vol. II. p. 219.

Cnicus pratensis, *Willd.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 238.

Perennial. Rootstock shortly stoloniferous, with cylindrical (rarely fusiform) root-fibres. Stem erect, simple, or slightly branched, hoary, especially in the upper part, not winged. Lower leaves attenuated at the base, upper ones semi-amplexicaul, broad-based but scarcely auricled, not decurrent, flat, entire and spinous-ciliated, or more or less pinnatifid-lobed or incised; lobes generally triangular, entire, or more rarely 2- or 3-cleft, spinous; under side more or less white-floccose. Anthodes solitary, on long stalks, rarely 2 or 3 together. Pericline ovate-globose, rounded at the base, arachnoid; phyllaries adpressed, with a dorsal nerve at the summit, lanceolate-acute, the outer ones terminated by a very short weak mucro, the upper ones sub-scarious and purple at the point. Pappus plumose.

In moist meadows. Rather rare; not extending North of York, Shropshire, and North Wales.

England, Ireland. Perennial. Late Summer
and Autumn.

Rootstock short, oblique, with the radical fibres generally slender, but sometimes, though very rarely, they are nearly as much thickened as in *C. tuberosus*. Stem erect, 6 inches to 2 feet high, generally simple, or with one or two branches, with few leaves, and these mostly below the middle of the stem. Leaves generally undivided, merely toothed along the edge, but sometimes the divisions between the teeth extend half-way down or more, so that the leaf becomes pinnatifid: the lobes then are sometimes much angulated, though, in all the specimens I have seen, with much shorter secondary lobes than those of *C. tuberosus*. The stem-leaves have much broader auricled bases than those of *C. tuberosus*, and all are much more arachnoid-floccose beneath. The periclines are more arachnoid, their outer scales more acuminate, and the inner with longer and narrower points. The flowers are of the same dark purplish-crimson. Corolla and achenes also similar to those of *C. tuberosus*. The whole plant is, however, softer and of a lighter green, and the leaves are much whiter beneath than in any of the preceding species.

Meadow-Thistle.

French, *Cirse des Prés, ou à Angleterre.* German, *Englische Kratzdistel.*

SPECIES IX.—**CARDUUS HETEROPHYLLUS.** *Linn.*

PLATE DCXCI.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2493.

Cirsium heterophyllum, All. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 456. *Fries,* Sum.

Veg. Scand. p. 5. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 222.

Cnicus heterophyllus, Willd. Hook. & Arn. Brit. Fl. ed. viii. p. 237.

Perennial. Rootstock stoloniferous, with slender cylindrical fibres. Stem erect, simple or slightly branched, not winged. Radical leaves stalked, elliptical-lanceolate, finely dentate and spinous-ciliate; stem-leaves sessile, amplexicaul, the upper ones enlarged at the base, with rounded auricles, generally undivided, but the lower stem-leaves are sometimes finely dentate, more rarely lacinate-pinnatifid with the segments pinnatifid and pointing towards the apex of the leaf, upper ones entire; all flaccid; not undulated, setose-ciliate, and cottony-white beneath. Anthodes without floral leaves at the base, solitary at the extremity of the stem and branches, rarely 2 or 3 aggregated at the extremity of the main stem. Pericline glabrous, ovate-globose, depressed at

the base; phyllaries 1-nerved, adpressed, lanceolate-strapshaped, the outer ones mucronate, the inner ones sub-scarious. Pappus plumose.

In moist pastures and by the sides of streams in upland districts. Rather rare. Confined to the middle and North of England and Scotland, where it is more common.

England, Scotland. Perennial. Late Summer
and Autumn.

Rootstock creeping, and producing short runner-like stolons terminated by a tuft of leaves. Stem stout, 18 inches to 4 feet high, generally simple but sometimes slightly branched, deeply furrowed, nearly leafless above the middle, arachnoid-floccose, especially towards the top. Radical leaves often very large, finely dentate; stem-leaves narrow, very acute, the lowest ones narrowed towards the base, but all the others with the base broad and auricled: above this part the leaf is slightly contracted, and again enlarged about or below the middle. Pericline $\frac{3}{4}$ to 1 inch across by about 1 inch long; phyllaries green, the outer ones tipped with purplish-olive, the inner with dull-purple. Flowers crimson-purple; florets much exceeding the phyllaries, limb slightly shorter than the tube. Achenes small, obovate-cylindrical, fawn-colour, smooth, often abortive. Pappus very long, dirty-white, strongly plumose. Leaves deep dull-green above, white beneath.

Melancholy Thistle.

French, *Cirse à Feuilles variables*. German, *Verschiedenblüttrige Kratzdistel*.

This Thistle is the *Cluas an fheidh* of the Highlanders, which is said by some to have been the original badge of the house of Stuart, instead of the Cotton-Thistle. The Thistle has long been the emblem of Scotland, as the Rose is of England and the Shamrock of Ireland.

SPECIES X.—**CARDUUS ACAULIS.** *Linn.*

PLATE DCXCII. DCXCII. (*bis*).

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXL.

Billot. Fl. Gall. et Germ. Exsicc. No. 1018.

Cirsium acaule, *All.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 457. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 224. *Fries*, Sum. Veg. Scand. p. 5.

Cnicus acaulis, *Willd.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 238.

Perennial. Rootstock short, with slender radical fibres. Stem very short, often almost none, more rarely elongated and branched, woolly with articulated hairs. Leaves rigid, greatly undulated, pinnatifid with the lobes 3- or 4-cleft, spinous and spinous-ciliate: when the stem is elongated (Pl. DCXCII. *bis*) the lower leaves are stalked and the upper ones much smaller and less divided, not

decurrent. Anthodes solitary, or aggregated when the stem is short, without floral leaves. Pericline ovate-ovoid, glabrous; outer phyllaries broadly lanceolate, ciliated at the margins, nerved towards the point, terminating in a stiff mucro, inner ones longer and sub-scarious. Pappus plumose.

In pastures, especially chalk downs. Rather common in the Southern half of England, particularly on the East side.

England. Perennial. Late Summer and Autumn.

Rootstock woody. Stem in the ordinary form so short that the flowers appear to be sessile in the centre of the rosette of leaves, but sometimes it attains the length of 1 foot or 18 inches, and then is usually slightly branched. Leaves resembling those of *C. tuberosus*, but much more spinous and rigid. Pericline $\frac{3}{4}$ inch across by 1 inch long, contracted towards the apex. Flowers dark-crimson; florets much longer than the phyllaries; tube rather longer than the limb. Achenes smooth. Pappus very long, silky, plumose, dirty-white. Plant sub-glabrous; leaves with only a few hairs on the upper side and on the veins beneath, dark shining-green.

In *C. palustris*, *C. tuberosus*, *C. pratensis*, *C. heterophyllus*, and *C. acaulis*, besides the perfect-flowered individuals, there are others in which the anthers are abortive.

Dwarf Thistle.

French, *Cirse Nain*. German, *Stengellose Ebernourz*.

This Thistle is very injurious in pastures; it kills all plants that grow beneath it, and ought not to be tolerated even on the borders of fields or waste places.

SPECIES XI.—*CARDUUS ARVENSIS*. *Curt.*

PLATES DCXCIII. DCXCIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXLII.

Billot, Fl. Gall. et Germ. Exsicc. No. 3125.

Cirsium arvense, *Scop.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 457. *Gr. & Godr.*

Fl. de Fr. Vol. II. p. 226. *Fries*, Sum. Veg. Scand. p. 5.

Cnicus arvensis, *Hoffm.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 237.

Serratula arvensis, *Linn.* Sp. Pl. p. 1149.

Perennial. Rootstock extensively creeping. Stem erect, branched, not winged. Leaves pinnatifid, sinuated or nearly entire, spinous, sub-glabrous above, cottony or glabrous beneath. Anthodes stalked, sub-corymbose or paniculate. Pericline of the male plants sub-globular; of the sub-female, ovate-ovoid, very slightly arachnoid; outer phyllaries adpressed, ovate, slightly

arachnoid at the apex, terminated by a very short spreading spine; inner ones lanceolate, acuminate, sub-scarious, not spinous, with a small scarious entire or denticulated appendage. Pappus plumose.

Var. α , *genuinus*.

PLATE DCXCIII.

Leaves undulated, semi-amplexicaul, and occasionally slightly decurrent, pinnatifid or deeply sinuated, with the lobes triangular, spinous, dentate, and terminated by a strong spine, generally more or less arachnoid, hairy beneath. Anthodes sub-corymbose.

Var. β , *setosus*.

PLATE DCXCIV.

Cirsium setosum, *M. Bieb. Fl. Tauric. Cauc. Vol. III. p. 561.*

Leaves flat, not undulated, amplexicaul, nor at all decurrent, very faintly sinuated or the upper ones nearly entire, spinous-ciliate with the spines weak, glabrous beneath. Anthodes sub-paniculate.

In cultivated fields and waste places. Very common, and generally distributed. Var. β not native, but found about Culross, not far from Dunfermline, Fife; it has also been found about Battersea, Hartlepool, and at Kirkwall, Orkney.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock creeping very extensively, and sending up leafy barren shoots and flowering-stems 1 to 3 feet high. Leaves of the barren shoots and those at the base of the flowering-stem attenuated and sub-petiolate, elliptical, less deeply lobed than the stem-leaves; stem-leaves sub-amplexicaul with strong spines at the margins. Anthodes rather shortly stalked, so as to be somewhat aggregated at the extremity of the stem and branches, most of them arranged in an irregular corymb. Pericline of the male flowers about $\frac{1}{2}$ inch each way, of the female $\frac{3}{4}$ inch long by $\frac{1}{2}$ inch broad; outer phyllaries short, and terminated by a minute weak spine, the inner ones with a slightly dilated scarious appendage, very much shorter than the phyllary itself. Flowers pale-purple; florets a little longer than the inner phyllaries, and with the tube much longer than the limb. Anthers short and imperfect in the sub-female plant, the ovary abortive in the male with the pappus short and not lengthening after flowering. Achenes dark-brown, smooth. Pappus brownish-white, very long, silky. Plant bright-green, the leaves often white beneath, but varying much in this respect.

Var. β is a remarkable plant, which probably ought to be considered a sub-species, but which is retained as a variety because there appear to be on the Continent several intermediate forms (which I have not seen) which seem to render it impossible to draw any line of demarcation between it and the common form. In this form the leaves are not only flat and less deeply divided, but the spines are so weak that the leaves may be handled with impunity, and they are all much more attenuated at the base. The anthodes too, in the specimens which have come under my notice, are arranged in a long lax panicle.

Creeping Plume-Thistle.

French, *Herbe-aux-varices*. German, *Feld Kratzdistel*.

HYBRIDS.

CARDUUS PRATENSIS-PALUSTRIS.

PLATE DCXCV.

Cnicus Forsteri, Sm. Eng. Fl. Vol. III. p. 390.

Intermediate between *C. pratensis* and *C. palustris*; differing from the former in the leaves being less decurrent, so that the stem is not so continuously winged; the under side of the leaves generally slightly arachnoid-pubescent; the stem, especially the upper part, cottony; the anthodes larger and more globose, less aggregated, usually not more than 2 or 3 together; the rootstock perennial; the phyllaries with shorter and weaker spines. From *C. pratensis* it is distinguished by the radical fibres being more slender; the flowering-stems growing more in tufts; the leaves more deeply sinuate-pinnatifid and spinous, those in the middle of the stem slightly decurrent, not hoary-white beneath; the anthodes much smaller and less arachnoid, the outer phyllaries with an evident spine.

In boggy places. Very rare. Frant, two miles from Tunbridge Wells (Mr. S. F. Forster), and White Moor Pond, near Guildford, Surrey (Mr. H. C. Watson); near Eridge and on Ditchling Common, Sussex (Mr. Borrer).

CARDUUS ACAULI-PRATENSIS (?)

PLATE DCXCVI.

C. Woodwardii, H. C. Watson, Cyb. Brit. Vol. II. p. 83.

Intermediate between *C. acaulis* and *C. pratensis*, and varying extremely in appearance, but always more nearly resembling the

latter than the former, so that it may be merely an extreme state of it. From the form of *C. acaulis* with the stem developed, it is distinguishable by being stoloniferous, having the radical fibres often fusiform, the leaves less spinous, the heads more globose and smaller, and the whole plant being arachnoid-pubescent, especially on the stem and under side of the leaves. From forms of *C. pratensis* with pinnatifid leaves, it differs in the leaves being much more deeply pinnatifid, the segments more deeply cut, with narrower lobes, and terminating in stronger spines; the pericline less arachnoid, the phyllaries shorter and broader, with dark striæ at the tip; the limb of the corolla more slender, rather shorter in proportion to the phyllaries, the style less protruded; and the whole plant less arachnoid-pubescent.

Some of the forms bear a very close resemblance to *C. tuberosus*, but the supposed hybrid is distinctly stoloniferous, as in *C. pratensis*, and has the stem stout as in that species, very cottony above, not thin and wiry, and not so tall as in *C. tuberosus*; the leaves are usually less deeply pinnatifid and with the segments less diverging, and with stronger spines; the outer phyllaries are broader and less gradually tapering; and the plant has the under side of the leaves and stem, especially in the upper part, more arachnoid-pubescent.

Found by the late Mr. S. P. Woodward, in the year 1848, in a piece of ground broken up only a few years before, on the farm of Mr. Thomas Arkell, at Penhill, in the parish of Stratton St. Margaret's, two miles from Swindon, Wilts; and between St. Donat's and Dunraven, Glamorganshire.

CARDUUS ARVENSI-ACaulis.

PLATE DCXCVII.

Intermediate between *C. arvensis* and *C. acaulis*, differing from the former by the anthodes being as large as those of *C. acaulis*, and the flowers crimson, the phyllaries green, the pappus short, and the stem woolly. From *C. acaulis* it is distinguished by its creeping rootstock, its branched stem 2 feet high, and by its leaves being less deeply pinnatifid with less divided segments—indeed, very similar to those of *C. arvensis*.

Roadside, near Burton-wood, Chesterford, Essex; found by Mr. G. S. Gibson.

Mr. G. S. Gibson has also found in Essex plants believed to be

hybrids between *C. arvensis* and *C. lanceolatus*, and *C. lanceolatus* and *C. acaulis*.

TRIBE II.—CARLINEÆ.

Florets all tubular and perfect, each one not surrounded by an involucl. Anthers with filiform appendages at the base. Pappus of hairs not united into a complete ring at the base, but cohering in bundles or quite free, su^b-persistent.

GENUS IV.—*CARLINA*. *Linn.*

Pericline of numerous imbricated phyllaries, the exterior ones foliaceous and spinous-dentate, the inner ones entire, elongated, scarious, coloured, generally spreading when dry, and forming a false ray. Florets all equal, perfect. Filaments free and glabrous; anthers with 2 filiform plumose appendages at the base, acuminate at the summit. Achenes oblong-cylindrical, clothed with minute adpressed bifurcate hairs; epigynous disk surrounded by the hairs which cover the achene. Pappus caducous, consisting of plumose hairs, thickened at the base, arranged in several rows united in threes or fours, but not forming a ring. Clinanth clothed with tubular scales at the apex, deeply laciniate.

Spinous herbs of various habit. Heads of flowers often showy, from the coloured inner phyllaries which spread in dry weather, but becoming erect when moistened.

SPECIES I.—*CARLINA VULGARIS*. *Linn.*

PLATE DCXCVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCXLII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1508.

Biennial. Stem elongated, corymbosely branched or simple. Lowest leaves oblanceolate, narrowed towards the base, spinous-dentate; those on the middle and upper part of the stem semi-amplexicaul, pinnatifid, with the segments spinous-dentate, arachnoid-floccose, especially beneath and when young; floral leaves shorter than or not exceeding the phyllaries, spinous. Outer phyllaries herbaceous, spinous-pointed with a row of divaricate branched spines on each side; inner phyllaries strapshaped, scarious, elastic, longer than the florets, yellow.

On dry banks and pastures. Rather scarce, except on the chalk,

where it is plentiful; rare in Scotland, where it occurs at intervals along the East coast as far as Kincardine and Moray, and on the West to the Isle of Arran.

England, Scotland, Ireland. Biennial. Summer and Autumn.

Root a tap-root, producing the first year a tuft of strap-shaped-oblongate, nearly flat leaves, hoary-floccose, especially beneath, very spinous, but with the spines short and weak. Flowering-stem 3 inches to 2 feet high, purple, slightly arachnoid, not winged. Leaves decreasing in length and increasing in width from the bottom to the top, strongly veined, spinous and waved at the edges. Anthodes $\frac{3}{4}$ to 1 inch across, or, including the ray, $1\frac{1}{2}$ at the extremity of the stem and branches, which latter frequently exceed the primary anthode. Pericline with leaves at the base, outer phyllaries green, tinged with purple, the inner very long, and straw-yellow, spreading and forming a false ray round the dark-purple florets. Achenes yellowish-brown, with adpressed silky hairs. Pappus plumose, the hairs cohering irregularly in twos or threes at the base. Pales of the clinanth cut at the apex into subulate segments rather longer than the pappus. Plant pale-green, the leaves rigid, coriaceous, and scarcely altering after the plant is dead, except in colour.

Carlina Thistle.

French, *Carlina Commune*. German, *Gemeine Eberwurz*.

The original name of this plant was *Carolina*, so called after Charlemagne, of whom the legend relates that "a horrible pestilence broke out in his army and carried off many thousand men, which greatly troubled the pious emperor. Wherefore he prayed earnestly to God; and in his sleep there appeared to him an angel, who shot an arrow from a cross-bow, telling him to mark the plant upon which it fell, for that with that plant he might cure his army of the pestilence. And so it really happened." The herb so miraculously indicated was this thistle. It does not, however, seem to possess any active properties, though Withering says it is valuable in hysterical cases. The flowers expand in dry and close in moist weather: they retain this property for a long time, and form rustic hygrometers. The presence of the Carlina Thistle indicates a very poor soil; it particularly infests dry, sandy pastures.

GENUS V.—ARCTIUM. *Linn.*

Pericline of numerous slender imbricated phyllaries, attenuated into a long subulate spreading point hooked at the apex. Florets all equal, perfect. Filaments free, papillose; anthers furnished at the base with 2 glabrous filiform appendages, and acuminate at the summit. Achenes oblong-ovoid, laterally compressed, with elevated longitudinal lines; epigynous disk surrounded by an

entire border. Pappus caducous, consisting of denticulate hairs arranged in several rows and free to the base. Clinanth hairy.

Large herbs with the leaves not spinous nor decurrent, the radical ones cordate at the base. Periclones globose or ovoid, readily attaching themselves to the clothes of passers-by and coats of animals by their hooked phyllaries. Flowers rose or purple.

The name of this genus of plants is said to come from *αρκτος* (*arktos*), a bear, from the roughness of its globular heads.

SPECIES I.—**ARCTIUM MAJUS.** *Schkuhr.*

PLATE DCXCIX

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXII. Fig. 2.

Billot. Fl. Gall. et Germ. Exsicc. No. 1904.

Bab. Ann. Nat. Hist. ser. iii. Vol. XV. p. 9.

A. majus et *A. tomentosum*, *Bab.* Man. Brit. Bot. ed. v. p. 156.

A. Lappa (*Linn.*), var. *a*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 234.

Lappa major, *Gärtn. Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 463. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 280. *Fries*, Sum. Veg. Scand. p. 5.

L. officinalis, *All.* *Reich.* l. c., p. 54.

Radical leaves broadly ovate, cordate, repand-denticulate; petioles solid. Anthodes in a lax corymb at the extremity of the stem and principal branches. Pericline globular in flower, not umbilicate at the base, glabrous or nearly so; phyllaries subulate, about as long as the florets. Limb of the corolla campanulate-cylindrical, attenuated at the base, not constricted below the teeth, glabrous; tube much longer than the limb, and much narrower at the base than the top of the fruit.

In waste places and by roadsides and borders of fields. Apparently common in England, but I have never seen it in Scotland, though as it is marked "S." in Professor Babington's Manual, no doubt it occurs there.

England, Scotland, Ireland. Biennial. Autumn.

Stem 3 to 4 feet high, with divaricate branches. Radical leaves very large, on long solid petioles, furrowed above. Anthodes stalked, 1 inch or more across, in lax few-flowered corymbs at the extremity of the main stem and principal branches and on shorter stalks, and sub-solitary from the axils of the lower leaves, glabrous or very slightly arachnoid. Phyllaries sub-triquetrous in the middle, subulate at the point, the apex of which forms a small hook, green or tinged with purple, the outer ones spreading, the inner ones scarious and purple, all terminated by a sharp-pointed hook. Flowers purple, with dark-purple stamens and whitish styles.

Achenes obovate-prismatic, compressed, with prominent longitudinal lines, rugose, greyish-olive, often marbled with black. Pappus short, brittle, denticulate. Plant pale-green; leaves generally whitish-cottony beneath.

Greater Burdock.

French, *Bardane Commune*. German, *Gebriüchliche Klette*.

Dr. Prior tells us that "this plant is called *dock*, as many others are, from its large leaves, but why *bur* is uncertain. Some derive this syllable from the French *bourre*, Latin *burra*, a lock of wool, such as we often find entangled in it. It may quite as probably be a corruption of *bardana*, or it may be a contraction of *butter*, from the leaf being used to wrap butter in." The stalks of the Burdock cut before the flower is open, and stripped of their rind, form a delicate vegetable when boiled, similar in flavour to asparagus. In the raw state they may be eaten with oil and vinegar as salad. They were sometimes candied with sugar in the time of Bryant, as those of Angelica are. They are slightly laxative, but perfectly wholesome. The seeds, which are bitter and slightly acrid, have been used in medicine. A decoction of the root forms one of the French pectoral ptisans; it has also been recommended as a wash for ulcers, &c. The bruised leaves are applied by the peasantry in some districts as cataplasms to the feet, and as a remedy for hysterical disorders. Even those of us who are not botanically inclined must be well acquainted with the fruits of this plant in our country autumnal walks. The little hooks of the involucre have a troublesome tendency to adhere to everything with which they come in contact, and we may often see our own or our companions' garments inadvertently decorated with these little balls. One writer on plants says, "they seem to justify their name, *lappa*, which comes from a Celtic word, *llap*, a hand, for they appear to have the power of catching at every passer-by." Shakespeare makes Pandarus say of his kindred:—

"They are burs, I can tell ye; they
Will stick where they are thrown."

SPECIES II.—**ARCTIUM MINUS.** *Schkuhr.*

PLATES DCC. DCCI. DCCII.

Lappa minor, *Lam.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 463.

A. Lappa, var. β , *Hook. & Arn.* Brit. Fl. ed. viii. p. 234.

Radical leaves ovate or oblong, cordate, repand-denticulate or crenate or dentate; petioles hollow. Anthodes in racemes at the extremity of the stem and principal branches. Pericline ovate-globular or ovate-ovoid in flower, arachnoid or glabrous; phyllaries narrowly subulate, as long as or shorter than the florets. Limb of the corolla cylindrical, tapering at the base, not constricted below the teeth, glabrous; tube about as long as the limb, much narrower at the base than the top of the fruit.

SUB-SPECIES I.—*Arctium intermedium*. *Lange*.

PLATE DCC.

*Bab. Ann. Nat. Hist. ser. iii. Vol. XV. p. 9.**A. pubens, Bab. Ann. Nat. Hist. ser. ii. Vol. XVII. p. 376; Man. Brit. Bot. ed. v. p. 187.*

Radical leaves flat, ovate, cordate, crenate; petioles with a small central hollow. Anthodes corymbo-racemose, the lower ones of the raceme long-stalked. Pericline rather large, ovate-globular, generally copiously arachnoid. Phyllaries equalling the florets.

In waste places and by roadsides and borders of fields. Probably not uncommon, but its exact distribution has not been ascertained.

England, Scotland, Ireland. Biennial. Autumn.

Stem 2 to 4 feet high, with spreading branches. Leaves resembling those of *A. majus*, but the stalks are not solid as in that form. Anthodes in sub-corymbose racemes on the stem and principal branches, regularly racemose on the smaller branches. Pericline $\frac{3}{4}$ to 1 inch across, usually purple, often arachnoid when young, but becoming glabrous when old; phyllaries longer in proportion, narrower and less spreading than in *T. majus*. Corolla pale-purple, not extending beyond the phyllaries. Achenes like those of *T. majus*, but rather smaller, dark-brown, very rugose, spotted or immaculate.

Intermediate Burdock.

French, *Bardane*. German, *Grossamige Klette*.

SUB-SPECIES II.—*Arctium nemorosum*. *Lej.*

PLATE DCC.I.

*Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCXII. Fig. 1.**Bab. Ann. Nat. Hist. ser. iii. Vol. XV. p. 10.**A. intermedium, Bab. Ann. Nat. Hist. ser. ii. Vol. XVII. p. 374; Man. Brit. Bot. ed. v. p. 186. Reich. l. c. (non Lange).*

“Radical leaves sub-convolute,” oblong-ovate, cordate, coarsely crenate with the crenatures apiculate. Anthodes spicate-racemose, all very shortly stalked or subsessile. Pericline rather large, ovate-globular, generally conspicuously arachnoid. Phyllaries equalling the florets.

In waste places, &c. Apparently local. Professor Babington describes it as abundant in the valley of Llanberis, Carnarvonshire, and has seen “what is apparently the same plant; from Hope in

Derbyshire, Berwick-on-Tweed, Bembridge, Isle of Wight, and Edinburgh.

England, Scotland. Biennial. Autumn.

I am unacquainted with this plant, and therefore give it only on Professor Babington's authority. It seems to differ from *A. intermedium* only in the longer and narrower radical leaves and the shortly-stalked anthodes. I have seen but a single dried specimen, collected at Llanberis by the Rev. W. W. Newbould, which has not the root-leaves.

Narrow-leaved Burdock.

SUB-SPECIES III.—*Arctium eu-minus*.

PLATE DCCII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVII. Tab. DCCCXI. Fig. 1.

A. minus, *Bab. Ann. Nat. Hist. ser. iii. Vol. XV. p. 11*, and *ser. ii. Vol. XVII. p. 375*;
Man. Brit. Bot. ed. v. p. 187.

Radical leaves oblong-ovate, cordate, coarsely dentate. Anthodes racemose, all shortly stalked or subsessile. Pericline small, ovate-ovoid, arachnoid or glabrous; phyllaries shorter than the florets.

In waste places. Common, and generally distributed.

England, Scotland, Ireland. Biennial. Autumn.

Stem 2 to 4 feet high; branches generally slightly drooping. Radical leaves with the teeth more acute than in any of the preceding forms; petioles with a large hollow. Anthodes much smaller, $\frac{1}{2}$ to $\frac{3}{4}$ inch across, truly racemose, or sub-spicate-racemose; phyllaries green or tinged with purple, more slender, less spreading and shorter in proportion to the florets than in any of the other Burdocks. Achenes rather narrower and generally darker in colour, with the black spots almost confluent.

Lesser Burdock.

GENUS VI.—*SAUSSUREA*. D. C.

Pericline of imbricated entire blunt or mucronate phyllaries, not appendiculate or spinous. Florets all equal, perfect. Filaments free, glabrous; anthers furnished at the base with two woolly filiform appendages, and longly acuminate at the summit. Achenes sub-cylindrical, finely striate; epigynous disk with a spreading border, which bears the external row of the pappus. Pappus double, the external row persistent, of denticulated hairs, the

internal row at length caducous, of plumose hairs united into a ring at the base. Clinanth hairy, the hairs sometimes united at the base into short tubes.

Rather small herbs, not spiny, the leaves often woolly below, and at first webbed above. Pericline ovoid, with rather broad herbaceous phyllaries. Flowers purple.

This genus of plants was named in honour of Saussure, a celebrated Swiss naturalist.

SPECIES I.—*SAUSSUREA ALPINA*. D.C.

PLATE DCCIII.

Serratula alpina, Linn. Sm. Eng. Bot. No. 599.

Stem erect, furrowed, slightly flocculent, simple. Radical leaves ovate or lanceolate, stalked; stem-leaves similar, but generally narrower, the lower ones indistinctly stalked, the middle and upper ones sessile, but not decurrent, the uppermost frequently strapshaped; all sharply dentate or nearly entire, sub-glabrous above, grey-floccose beneath. Anthodes very shortly stalked, 4 to 12, aggregated in a dense terminal corymbose head. Pericline cylindrical-ovoid; outer phyllaries broadly ovate, concave, not mucronate, downy; inner ones lanceolate, twice as long as the outer, densely pilose in the portion which is not covered by the outer ones.

In moist places and ledges of alpine rocks. Rare. Most frequent in the Scotch highlands; in England it occurs on the mountains of North Wales, and the Lake district.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock stoloniferous, the stolons short, ending in tufts of radical leaves, variable in breadth and the degree of incision on the margin. Flowering-stem 3 to 18 inches high, rather stout, very leafy, the leaves decreasing in size upwards, the uppermost ones often very narrow. Pericline about $\frac{1}{2}$ inch long, with rather few phyllaries, the outer ones blunt, concave, purple, slightly pilose, in about two rows, inner ones greenish, but quite concealed by the long dense greyish hairs which cover them. Florets a little longer than the phyllaries, purple, with the anthers darker. Achenes brown, with paler ribs. Pappus dirty-white, double; hairs of the inner one thickened towards the base, very plumose; the outer very deciduous, with secondary hairs visible only under a

lens. Plant dull-green ; anthodes and the under side of the leaves grey, the latter at length glabrous above.

Alpine Saw-wort.

French, *Saussurée des Alpes*.

TRIBE III.—CRUPINEÆ.

Florets all tubular, perfect, or the marginal ones neuter or female, each one not surrounded by an involucl : occasionally the anthodes are sub-diœcious by abortion. Anthers without basal appendages. Pappus persistent, of hairs free at the base. Fruit attached to the clinanth by its base.

GENUS VII.—**SERRATULA.** *Linn.*

Pericline of imbricated entire phyllaries, the exterior ones mucronate, the interior scarious at the apex. Florets all equal, perfect or unisexual and sub-polygamo-diœcious by abortion. Filaments free, papillose ; anthers without basal appendages. Achenes oblong-ovoid, laterally compressed, glabrous, with an elevated line on each face, the base oblique, but the attachment is not lateral ; epigynous disk with a very faint entire border. Pappus persistent, consisting of denticulated hairs, arranged in several rows, the innermost ones longest, free to the base. Clinanth hairy.

Herbs without, or nearly without, spines, glabrous or scabrous. Pericline ovoid or sub-cylindrical. Flowers purple, varying to white.

The name of this genus comes from *serra*, a saw, on account of the jagged edges of the leaves of the species.

SPECIES I.—**SERRATULA TINCTORIA.** *Linn.*

PLATES DCCIV. DCCIV. (*bis*).

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCCII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2494.

Leaves pinnatipartite, frequently sub-lyrate ; segments bristly-serrulate, the radical and lower ones petiolate, rarely entire ; the uppermost sessile. Anthodes stalked, rarely subsessile, sub-polygamo-diœcious, corymbose. Pericline of the sub-perfect flowers oblong-cylindrical, of the female cylindrical-ovoid ; outer phyllaries ovate-acute, inner ones elongate-strapshaped, all ad-

pressed. Florets a little longer than the phyllaries in the female flowers, equalling them in the male.

Var. α , *genuina*.

S. tinctoria, *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 364.

Anthodes stalked, arranged in a lax corymb.

Var. β , *monticola*.

S. monticola, *Boreau*, l. c., p. 364.

Anthodes subsessile, in a head-like corymb, fewer and larger than in var. α .

In woods and bushy places and among brakes. Rather common in England, rare in Scotland, but plentiful in the woods about Tumlin Bridge, Kirkcudbright. Var. β , rocks on the coast of Cornwall.

England, Scotland. Perennial. Autumn.

Stem slender, wiry, 1 to 3 feet high, slightly branched in the upper half; the uppermost branches corymbosely disposed. Leaves very variable, from so deeply pinnatifid as to be almost pinnate to entire and merely bristly-serrulate at the margin; the upper leaves generally sub-lyrate, with the terminal segment much larger than the others. Pericline of the sub-perfect flowers $\frac{1}{2}$ to $\frac{5}{8}$ inch long, of the female rather larger and broader; outer phyllaries woolly at the margin, the inner ones merely rough, all generally purplish on the exposed portion. Florets reddish-purple; corolla of the sub-perfect flowers swollen in the middle. Anthers of the sub-perfect flowers dark-blue, those of the female plant white and abortive. Styles of the sub-perfect florets with the branches contiguous; of the female longer with the branches diverging. Achenes fawn-colour, slightly rough with very faint elevated lines. Pappus of yellowish-white hairs with their secondary hairs invisible to the naked eye. Plant dark-green, slightly shining, sub-glabrous or with a few scattered hairs on the leaves and slightly rough.

Var. β scarcely deserves the name of a variety, though made a species by Professor Boreau; I have seen it only in Mr. H. C. Watson's herbarium: it is represented in E. B. No. 38.

Common Saw-wort.

French, *Sarrette des Teinturiers*. German, *Farber Scharte*.

TRIBE IV.—CENTAUREÆ.

Florets all tubular, each one not surrounded by an involucrel, those of the disk perfect; the exterior ones generally neuter and

much larger, so that the anthodes are frequently radiant. Anthers without basal appendages. Pappus of hairs or paleæ not united at the base, persistent or separately caducous. Achenes attached to the clinanth by the side near the base, but not by it.

GENUS VIII.—CENTAUREA. *Linn.*

Pericline of numerous imbricated scales, generally with a terminal appendage, which is sometimes scarious and then entire or lacerated or pectinated, sometimes horny and spinous. Florets of the disk perfect, those of the circumference generally larger and radiant, neuter. Filaments free, papillose; anthers without basal appendages. Achenes oblong-ovoid, laterally compressed, smooth, and without raised lines, attached by the side above the base; epigynous disk with an entire border. Pappus persistent or caducous, sometimes absent, or very short, sometimes of elongated denticulated hairs, arranged in several rows, free at the base, the internal row of shorter connivent hairs. Clinanth hairy.

Herbs of very various habit, with the anthodes usually radiant, the exterior florets mostly elongated and trumpet-shaped. Florets purple, rose, crimson, or blue, varying to white, or yellow.

The name of this genus of plants arises from a fable, that with one of the species the Centaur Chiron cured the wound in his foot made by the arrow of Hercules.

SECTION I.—JACEA. *Cass.*

Phyllaries adpressed, with terminal appendages often pectinate, not spinous, not decurrent upon the phyllary.

SPECIES I.—CENTAUREA JACEA. *Linn.*

PLATE DCCV.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tabs. DCCLIV. DCCLV.

Billot, Fl. Gall. et Germ. Exsicc. Nos. 284, 806.

Stem not winged. Lower leaves oblanceolate, upper ones lanceolate or oblong, entire or toothed or sinuate-pinnatifid. Anthodes generally radiant, with a few floral leaves in the immediate vicinity. Pericline globular; appendages orbicular, concave, broader than the phyllaries themselves, pale, lacinate or the lower ones lacinate-pectinate. Florets purple. Pappus none.

In meadows and by roadsides. Very rare, and doubtless accidentally introduced. The only well-authenticated localities are

near Henfield, Sussex (Mr. Borrer); Acton, Middlesex (Rev. W. W. Newbould), and near Belfast.

[England, Ireland.] Perennial. Autumn.

Stems erect, 6 inches to 2 feet high, generally slightly corymbosely branched in the upper half. Lower leaves attenuated at the base, often coarsely toothed or pinnatifid; upper leaves usually entire, or with only 1 or 2 teeth at the base. Pericline $\frac{1}{2}$ inch to $\frac{3}{4}$ across, generally entirely concealing the phyllaries; these appendages are usually fawn-colour, with whitish edges, adpressed, concave; the outer ones often have a triangular centre, and a torn or limbiate margin, the inner ones merely toothed, and the innermost of all entire. Florets purplish-crimson, the outer ones sterile, elongated, trumpet-shaped, forming a ray surrounding the head. Plant dull-green, rather rough with small hairs.

The only British specimens I have seen are those from Acton: these are very imperfect, but seem to belong to the Continental form called *C. amara*, D. C. (*C. serotina*, Boreau), which flowers later in the year, has the stems more slender and wiry, the branches longer and less thickened below, the anthodes and the leaves narrower than in the typical *C. Jacea*.

Brown-rayed Knapweed.

French, *Centauree Jacea*. German, *Gemeine Flockenblume*.

SPECIES II.—**CENTAUREA NIGRA.** *Linn.*

PLATES DCCVI. DCCVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCLXI. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 808.

Stem not winged. Lower leaves oblanceolate, upper ones lanceolate, oblong, or strapshaped, entire, toothed, or sinuate-pinnatifid. Anthodes generally not radiant, with a few floral leaves in their immediate vicinity. Pericline globular or ovate-globular; outer appendages triangular, the rest sub-orbicular, broader than the phyllaries themselves, dark-brown or black, all except the innermost pectinate and flattish. Florets purple. Pappus short or none.

Var. *α*, *genuina*.

PLATE DCCVI.

C. nemoralis et nigra, *Jord. Pug. Pl. Nov.* p. 104.

C. nigra, *Hook. & Arn. Brit. Fl. ed. viii.* p. 240.

Branches short, much thickened under the anthodes, which are very rarely radiant. Phyllaries concealed by the appendages.

Appendages black, very densely imbricated, with the cilia much longer than the undivided portion, dark brown.

Var. β , *decipiens*. Bab.

PLATE DCCVII.

Bab. Man. Brit. Bot. ed. v. p. 188.

C. decipiens, Thuill. Fl. Par. p. 445 (?).

C. nigrescens, C. pratensis (?), *C. microptilon*, et *C. Debeauxii, Gr. & Godr. Fl. de Fr. Vol. II. pp. 241 to 243.*

C. nigrescens Willd. (?) Hook. & Arn. Brit. Fl. ed. viii. p. 240.

Branches slender, generally elongated, only slightly thickened beneath the anthodes, which are often radiant. Appendages brown, somewhat spreading, the lower ones small, not concealing the phyllaries; the cilia somewhat shorter than in var. α , brown or pale-brown.

In pastures, borders of fields, roadsides, &c. Very common, and generally distributed. Var. α very common in the North; var. β apparently confined to the South of England, where it is abundant. I have seen it from Surrey, Kent, Sussex, Hants, Dorset, Devon, Gloucester, Wilts, Somerset, and Cambridge and Berks.

England, Scotland, Ireland. Perennial. Autumn.

Stem 6 inches to 3 feet high, generally slightly branched in the upper part. Leaves very variable, both in breadth and degrees of division, the upper ones narrower and generally entire. Anthodes $\frac{1}{2}$ to $\frac{3}{4}$ inch or more across. Achenes whitish-grey, rather shiny, with a few short hairs and generally no pappus. Plant dull-green, rather rough with small hairs.

Var. β is a more elegant plant, with the pericline generally smaller and less globular, and the branches more wiry than in var. α . It is not impossibly a distinct sub-species; but I have failed to discover any actual line of demarcation between it and var. α , and often feel at a loss to decide to which of the two forms some specimens ought to be referred: no dependence can be placed on the presence or absence of pappus.

The radiant form of var. α appears to be scarce; it is, however, not uncommon about Aberdeen. Another form has all the florets elongated, or several rows of them elongated, but is destitute of the elongated trumpet-shaped ray which is commonly present in var. β . Var. α bears much the same relation to var. β as the *C. Jacca* does to the *C. serotina* of Continental authors mentioned under the preceding species.

Black Knapweed.

French, *Centaurée Noire*. German, *Schwarze Flockenblume*.

SECTION II.—CYANUS. *Desv.*

Phyllaries adpressed, with terminal appendages pectinate or dentate-ciliate, not spinous, decurrent along the edges of the phyllary, but not reaching its base.

SPECIES III.—*CENTAUREA SCABIOSA*. *Linn.*

PLATE DCCVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCLXXIV.

Billot. Fl. Gall. et Germ. Exsicc. No. 2699.

Roodstock woody. Lower leaves oblanceolate, stalked, generally pinnatifid, with the segments pinnatifid, more rarely entire or simply dentate; stem-leaves not decurrent, generally pinnatifid or pinnatifid, frequently sub-lyrate. Anthodes generally radiant, on naked peduncles. Pericline sub-globular, generally glabrous; phyllaries with triangular pectinated dark-coloured appendages. Florets purplish-crimson, the radiant ones with the limb divided nearly to the base into linear-strapshaped segments. Pappus about as long as the achene.

In pastures, borders of fields, and waste places. Not uncommon in England, where it is very abundant on the chalk; rare in Scotland, and principally confined to the East coast, where it occurs in Haddington, Perth, Aberdeen, and Moray.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock thick and woody in old plants. Stem 1 to 3 feet high, generally slightly branched. Leaves firm, very variable in the degree of division, but generally so deeply pinnatifid as to be almost pinnate, with the segments again pinnatifid. Pericline $\frac{3}{4}$ to $1\frac{1}{4}$ inch across, generally with the appendages not concealing the green part of the phyllaries, but appearing as black horseshoe marks on the pericline. Achenes iron-grey, pubescent, with short stiff white pappus. Plant dull-green, sparingly pubescent.

Greater Knapweed.

French, *Centauree Scabieuse*. German, *Scabiosenartige Flockenblume*.

This large species of Knapweed was in olden times called Matte felon, and its name is supposed to have been given it because its rough knobs were suited "to scourge felons withal." As early as 1410 it was called Maude felone, or Bollside. "Thys herbe," says the writer, "hath a flowre of purplish colour, and leaves y' like to scabyose." But Miss Prato suggests that in those old times whitlows were also called felons; and

as this plant, or one of its allies, was used as a cure for wounds and various maladies, it was probably held to cure these. Why it should also have had the old name of "Cowede" is not very obvious.

SPECIES IV.—**CENTAUREA CYANUS.** *Linn.*

PLATE DCCIX.

Reich, Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCLXVIII. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 2656.

Annual or biennial. Stem erect, branched, not winged, the branches slender, elongated. Lower leaves pinnatifid, with strapshaped or linear distant segments and a larger terminal one, more rarely entire and oblanceolate; upper leaves strapshaped or linear-strapshaped, entire. Anthodes on naked peduncles. Pericline slightly arachnoid-hairy, ovate-ovoid; appendages of the phyllaries narrow, the margins cut into unequal narrowly-triangular teeth; those of the outer phyllaries often silvery-white, of the middle ones usually brownish-black or fawn-coloured, with the teeth sometimes edged with white. Florets blue, the radiant ones with the limb divided about half-way down into triangular-strapshaped teeth.

In cultivated fields and by roadsides. Rather common, and generally distributed.

England, Scotland, Ireland. Biennial or annual. Summer and Autumn.

Stem 1 to 3 feet high, slender, furrowed, somewhat corymbosely branched, with the branches ascending. Pericline $\frac{1}{4}$ to $\frac{1}{2}$ inch across, longer than broad, with much fewer phyllaries than in the preceding species; inner ones much longer than the others. Florets of the ray brilliant blue; those of the disk pale purplish-rose with the limb blue. Anthers purple. Achenes silvery-grey, slightly pubescent, with a short reddish-white pappus. Plant green, with the stem, peduncles, and leaves more or less white with arachnoid pubescence.

Blue-bottle, or Corn-flower.

French, *Centauree Bleue*. German, *Kornblume*.

The common name of this species of *Centaurea* is given to it from the bottle shape of the involucre and its brilliant blue flower. The Corn-cockle must not be confounded with this Corn-flower. Hardly any flower is of so beautiful a blue as this, and in the country districts it is often called blue cup and blue bonnet; but the toughness of its stems gained for it the far less complimentary name of *hurt-sickle*.

Our own poets often allude to this peculiarity.

“Blue-bottle, thee my numbers fain would raise,
 And thy complexion challenges my praise.
 Thy countenance, like summer skies, is fair;
 But, ah! how different thy vile manners are.
 Ceres for this excludes thee from my song,
 And swains, to gods and me a sacred throng,
 A treacherous guest, destruction thou dost bring
 To th’ hospitable field where thou dost spring.
 Thou blunt’st the very reaper’s sickle, and so
 In life and death becom’st the farmer’s foe.”

All over Germany this is a favourite flower, and the fields in that land look much gayer than our own, both from the abundance of this Corn-flower and from a variety of other blue blossoms among the corn. Possibly the presence of these plants is not indicative of the best sort of husbandry.

The expressed juice of the petals of this Knapweed makes good blue ink; it dyes linen of a beautiful blue, but the colour is not permanent. The plant was named *Cyanus*, after a youthful devotee of *Flora*, whose chief occupation seems to have been loitering in the fields and weaving garlands of this and other corn-flowers:—

“There is a flower, a purple flower,
 Sown by the wind, raised by the shower,
 O’er which Jove has breathed a powerful spell,
 The truth of whispering hope to tell.

Now, gentle *Flora*, I pray thee tell
 If my lover loves me, and loves me well.
 So may the fall of the morning dew
 Keep the sun from fading thy tender blue.”

The Knapweeds are sometimes called Iron-weeds, from the hard ball on which the florets are set; they are like thistles, but may readily be distinguished from them by the absence of spines or prickles. The Centaury had a certain medicinal reputation in days gone by. Gerarde, after recounting other virtues of the herb, says,—“The Italian Physitians do give the powder of the leaves once in three days, in the quantity of a dram with annise or caraway seeds in wine or other liquor, which prevaieth against the dropsie and green sicknesse:—

“My flowre is sweet in smell, bitter my juyce in taste,
 Which purge choler, and helps liver, that else would waste.”

SECTION III.—SERIDIA. *D. C.*

Phyllaries with adpressed or spreading corneous appendages, palmately divided into short nearly equal spines, not decurrent along the borders of the phyllaries.

SPECIES V.—**CENTAUREA ASPERA.** *Linn.*

PLATE DCCX.

*Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCXCIX. Fig. 2.**Billot, Fl. Gall. et Germ. Exsicc. No. 1244.**C. Isnardi, Linn. Sm. Eng. Bot. No. 2256. Lab. Man. Brit. Bot. ed. ii. p. 189.**Hook. & Arn. Brit. Fl. ed. viii. p. 241.*

Lower leaves oblanceolate, dentate or pinnatifid, generally sublyrate; upper leaves strapshaped or lanceolate, dentate or nearly entire, not decurrent. Anthodes solitary, glabrous, with a few leaves in their immediate vicinity. Pericline ovate-globular, glabrous or very slightly arachnoid; phyllaries coriaceous, with the appendages spreading, palmate, with 3 to 5 nearly equal spines much shorter than the phyllaries. Florets pale-purple, the barren ones of the ray not longer than the fertile ones. Pappus about as long as the achene.

In waste places and borders of fields. Very rare. A few plants occur along the side of a wall at Vazon Bay, Guernsey.

Channel Islands. Perennial. Summer and Autumn.

Stem ascending, 1 to 3 feet high, much branched. Leaves very variable in outline, the lower ones attenuated into a petiole, which is semiamplexicaul at the base, upper ones sessile or amplexicaul. Pericline oval-globose, $\frac{1}{2}$ to $\frac{3}{4}$ inch across; phyllaries with the appendages cut into divaricate reddish spines $\frac{1}{4}$ to $\frac{1}{2}$ inch long, which project outwards. Achenes whitish. Pappus of white hairs about half as long as the achene. Plant dull-green, sparingly hairy; the upper part of the stem slightly arachnoid pubescent.

The form with the upper leaves amplexicaul has been considered distinct, and believed to be the *C. Isnardi* of Linnæus; but he says (*Sp. Pl.* 1295) that his plant is perhaps a mere variety or hybrid offspring of *C. pullata*, a species totally unlike *C. aspera*.

Rough Star-thistle.

French, *Centaurée Rude*.

SECTION IV.—**CALCITRAPA.** *Koch.*

Phyllaries with adpressed or spreading corneous appendages, terminating in a stout spine, with smaller spines upon it at the base, not decurrent upon the phyllaries.

SPECIES VI.—*CENTAUREA CALCITRAPA*. Linn.

PLATE DCCXI.

*Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCXCVIII. Fig. 1.**Billot, Fl. Gall. et Germ. Exsicc. No. 1902.*

Biennial. Stem not winged, branched, with divaricate branches. Radical- and lower stem-leaves pinnatifid; uppermost leaves dentate or entire. Anthodes subsessile, pseudo-lateral and terminal. Pericline ovate-cylindrical, glabrous; appendages terminating in a stout spine, longer than the pericline, channelled on the upper side at the base, and with 2 or 3 short spines near its base on each side. Florets pale purplish-rose, those of the ray not longer than the fertile ones. Pappus none.

In waste places and by roadsides. Rare, and chiefly found in the South-east of England, though it has also occurred in Cornwall, Devon, and Somerset. Its Northern limits seem to be Norfolk, Cambridge, and South-east Wales.

England. Biennial. Late Summer and Autumn.

Radical leaves very deeply pinnatifid, with the segments distant, entire or toothed. Stem at first erect, terminating in an anthode, immediately beneath which a proliferous branch is given off, which again terminates in a flower-head, and the same process being repeated, late in the season the anthodes appear lateral; these branches are decumbent, and the ultimate ones have the leaves much narrower and scarcely at all pinnatifid, sometimes even entire. Anthodes, exclusive of the spines, $\frac{3}{8}$ inch across; terminal spine of the appendage $\frac{1}{2}$ to 1 inch long, the lateral spines very much shorter, 1 to 5 on each side. Achenes small, whitish marbled with brown, or entirely white, usually without pappus. Plant dull-green, at first pubescent, at length nearly glabrous.

Star-thistle.

French, *Centauree Chausse Trappe*. German, *Distelartige Flockenblume*.

The specific name of this species is due to the resemblance of the calyx to the *caltrop*, or iron ball covered with spikes, formerly used for throwing under the horses' feet to lame them on a field of battle. It is a troublesome weed to agriculturists in certain districts, and only to be eradicated by breaking up the ground so infested.

SPECIES VII.—**CENTAUREA SOLSTITIALIS.** *Linn.*

PLATE DCCXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XV. Tab. DCCXCV. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 266.

Annual. Stem winged throughout, much branched. Radical leaves lyrate-pinnatifid, those in the middle and upper part of the stem strapshaped, entire, decurrent. Anthodes without leaves in their immediate vicinity. Pericline ovate-ovoid, usually arachnoid; appendages of the phyllaries at the base of the pericline with the main spine rather short, those in the middle with the spine longer than the pericline; spines not channelled on the upper side at the base, with 2 or 3 short spines on each side near the base. Florets bright-yellow, those of the ray shorter than the fertile ones. Pappus longer than the achene.

In lucerne and sainfoin fields. Rare, and not native. It seems to be most persistent in the South-east of Kent.

[England.] Annual. Late Autumn.

Plant forming a scrubby bush 18 inches to 2 feet high, with the lower part of the stems very stiff, almost woody; branches when young soft, with very broad wings decurrent from the short strapshaped leaves. Pericline $\frac{3}{8}$ to $\frac{1}{2}$ inch across; the spines of the middle phyllaries $\frac{1}{2}$ to 1 inch across, pale-yellow; inner phyllaries with scarious appendages. Achenes white, with a long pappus of soft white hairs. Plant hoary, arachnoid-pubescent.

St. Barnaby's Thistle.

French, *Centaurée du Solstice.* German, *Sonnenwende Flockenblume.*

This plant obtains its trivial name from being supposed to flower about the 11th June, old style, St. Barnabas-day. Before the alteration in style, the summer solstice fell on the 12th June, the day after St. Barnabas, and the old nursery rhyme was more appropriate:—

“Barnaby—Barnaby bright,
The longest day and the shortest night.”

SUB-ORDER II.—**CORYMBIFERÆ.**

Anthodes with the florets of the disk generally perfect and tubular, those of the margin female (or rarely neuter) and ligulate (*heterogamous* and *radiant*); more rarely with all the florets tubular,

those of the disk perfect, and those of the margin female (*heterogamous* and *discoid*), or all the florets tubular and perfect (*homogamous* and *discoid*). Style not thickened below the point where it divides into two branches. Pericline usually hemispherical or saucer-shaped. Phyllaries not spinous-pointed in any of the British species. Juice not milky. Plant often aromatic.

TRIBE I.—ANTHEMIDEÆ.

Leaves alternate. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect; those of the ray generally female, more rarely neuter, ligulate or more rarely tubular. Anthers without basal appendages. Branches of the style in the fertile florets linear, convex externally, flat internally, hairy or tufted at the apex. Achenes various; pappus none or membranous and crown-like.

GENUS IX.—CHRYSANthemum. Linn.

Anthodes heterogamous and radiant, rarely discoid, many-flowered. Clinanth hemispherical, more rarely nearly flat or conical, without paleæ. Pericline hemispherical or saucer-shaped, of numerous phyllaries which are generally imbricated, herbaceous with scarious margins. Florets of the disk tubular, perfect; those of the ray generally ligulate and female. Achenes cylindrical or prismatic or trigonous, ribbed, crowned by a large epigynous disk, with or without a membranous crown representing the pappus.

Herbs with alternate toothed or finely-divided leaves; anthodes generally rather large, with the florets of the disk yellow, those of the ray white, yellow, or rose-colour.

The name of this genus of plants comes from the words χρυσος (*chrusos*), golden, and ανθος (*anthos*), flower, descriptive of its large yellow blossoms.

SUB-GENUS I.—EU-CHRYSANthemum.

Clinanth flattish or slightly convex in fruit. Florets of the ray yellow, ligulate, 4- or 5-toothed at the apex. Achenes of two forms, those of the female flowers of the ray trigonous or triquetrous, compressed, sometimes with the lateral angles winged,

those of the disk turbinate-cylindrical, equally ribbed, with or without a crown.

SPECIES I.—**CHRYSANTHEMUM SEGETUM.** *Linn.*

PLATE DCCXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXXVI. Fig. I.

Billot, Fl. Gall. et Germ. Exsicc. No. 395.

Zanthophthalmum segetum, C. H. Schultz, über die Tanacet. p. 17.

Leaves glabrous and glaucous, oblong or oblong-wedged-shaped, inciso-serrate or pinnatifid, the lower ones attenuated at the base into a winged petiole, the upper amplexicaul. Anthodes solitary, pericline flattish. Phyllaries broadly ovate, with very broad light-brown scarious margins and tips. Florets of the ray yellow. Achenes of the ray-florets sub-trigonous with narrow lateral wings, those of the disk-florets sub-cylindrical, all without a crown.

A weed in cultivated fields. Generally distributed, but becoming scarce in the more highly cultivated districts through improved farming.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem erect, 12 to 18 inches high, branched, the branches rather elongate and spreading-ascending. Leaves slightly fleshy, more or less deeply divided; the uppermost ones sometimes nearly entire. Peduncles hollow, enlarged upwards. Anthodes (including the ray) $1\frac{1}{2}$ to $2\frac{1}{2}$ inches across. Pericline slightly umbilicate, with the phyllaries glaucous-green, broadly edged with a dry semi-transparent light-brown border. Florets of the disk very broad, irregularly toothed at the apex. Achenes brownish-white, with a compressed triangular cross-section from the development of a corky wing on each side nearer the outer than the inner face; achenes of the disk without wings. Plant glabrous and glaucous.

Corn Marigold.

French, *Chrysanthème des Blés.* German, *Saat Wucherblume.*

This plant may still be found in our cornfields, although careful farming has greatly diminished its places of habitation, and shortly it may find the garden its only place of refuge. It is a very troublesome weed to the farmer, particularly in the turnip fields of Norfolk, on a sandy soil. In Denmark there is a law to oblige farmers to root it up out of their fields; and Threlkeld states, in 1727, that in Britain "Mannour courts do amerce careless tenants who do not weed it out before it comes to seed;" a laudable practice worthy of being retained. It is generally called the Corn Marigold;

and although it is probable that the name of Marigold was originally given to the *Calendula*, the garden Marigold, we think the name is well applied to this plant with its beautiful golden blossoms. It has many other names in different parts of England. In some parts it is called "St. John's bloom," in Kent yellow-bottles, ruddes or ruddle in Norfolk, gowlans or goules in the North of England, and yellow gowans or gools in Scotland. In the latter country a custom prevailed at one time, called "gool ridings," when the landlords rode over the fields and exacted a penalty from farmers on whose ground the conspicuous yellow Marigold predominated. In Germany it is used for dyeing yellow.

SUB-GENUS II.—TANACETUM. "*C. H. Schultz*," *Reich. fl.*

Clinanth flattish or slightly convex in fruit. Florets of the ray commonly white, ligulate, or the ligule sometimes absent. Achenes all similar, cylindrical or cylindrical-turbinate or cylindrical-prismatic, equally ribbed.

SECTION I.—LEUCANTHEMUM. *Tournef.*

Anthodes solitary. Pericline saucer-shaped. Clinanth flattish or slightly convex in fruit.

SPECIES II.—CHRYSANTHEMUM LEUCANTHEMUM.

Linn.

PLATE DCCXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1236.

Tanacetum Leucanthemum, "*C. H. Schultz*, über die Tanacet. p. 35." *Reich. fl.* l. c., p. 49.

Leucanthemum vulgare, *Lam. D. C. Prod. Vol. VI. p. 46. Gr. & Godr. Fl. de Fr. Vol. II. p. 140. C. H. Schultz*, über die Tanacet. p. 36.

Radical leaves spatulate, petiolate; lower stem-leaves spatulate or wedgeshaped, inciso-crenate or shallowly pinnatifid; upper leaves oblong or oblong-strapshaped, sessile, semi-amplexicaul, serrate, all green. Anthodes solitary at the extremity of the stem and elongated branches. Pericline flattish, of numerous herbaceous phyllaries with rather narrow dark reddish-brown scarious margins and tips, the outer ones lanceolate, the inner oblong-strapshaped. Florets of the ray elongated, white, rarely absent. Achenes cylindrical, with 5 to 10 very prominent nearly equal ribs, those of the ray (generally ?) with a short crown, those of the disk naked at the apex.

In pastures, meadows, roadsides, and waste places, &c. Very common, and universally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock slender, woody, branched. Stems erect, 1 to 2 feet high, sparingly hairy with jointed hairs. Leaves very variable in the degree of incision, those of the barren tufts generally crenate or doubly crenate, those towards the base of the stem attenuated, crenate, inciso-serrate or sometimes pinnatifid; upper ones generally inciso-serrate and semi-amplexicaul at the base. Anthodes, including the ray, $1\frac{1}{2}$ to 2 inches across; disk rather convex. Florets of the disk yellow with the tube dilated and winged at the base, those of the ray with the ligule broad, rounded, or very faintly toothed at the tip. Achenes dark-grey, with very prominent white ribs. Plant deep-green, sub-glabrous, with minute scattered jointed hairs on the leaves, especially on the veins. All the specimens I have examined have a crown at the apex of the achenes of the ray-florets, but most authors describe them as destitute of one.

Great White Ox-eye.

French, *Chrysanthème grande Marguerite*. German, *Grosse Kaseblume*.

The trivial name of this species of *Chrysanthemum* is as significant as its generic name—it is, in reality, white flower, the two names together being expressive of the two colours united in it. The old Northern name for this daisy was Baldur's brow; and this, with many other species of *Chrysanthemum* became also dedicated to St. John. We find a writer in the *Quarterly Review* writing thus: "The attributes of the Baptist are sometimes shared in a remarkable manner by St. John the Evangelist; and the golden 'sunflowers,' as these *Chrysanthemums* were formerly called, are occasionally introduced in representations of the latter saint with singular beauty and fitness. Thus, in stained glass of the 12th century filling a window in the apse of St. Rémi at Rheims, the Virgin and St. John appear on either side of the cross, the heads of both encircled by aureoles having sunflowers in their outer circles. The flowers are turned towards the Saviour on the cross as toward their true sun." The sunflowers of the garden are different flowers altogether, and are an importation from Peru.

The *Chrysanthemum* of the garden, that glorious ornament of the later months of the year, is a native of Japan, but belongs to the same genus as our humble Ox-eye. The first specimen of this foreign kind was cultivated here at Kew, and was of a purple colour. From this variety all the sorts now so fashionable have been derived. The little "pomponé" *Chrysanthemum* was brought from Chusan by Mr. Fortune, and for a long time was known as the "Chusan daisy."

The young leaves of our native Ox-eye may be eaten as a salad. Gerarde tells us that "Dioscorides saith, that the floures of Oxeye made up in a seare cloth doe asswage and waste away cold hard swellings; and it is reported that if they be drunke by and by after bathing, they make them in a short time well coloured that have beene troubled with the yellow jaundice."

SECTION II.—PYRETHRUM. *Linn.*

Anthodes corymbose. Pericline hemispherical. Clinanth hemispherical in fruit.

SPECIES III.—CHRYSANTHEMUM PARTHENIUM.

Pers.

PLATE DCCXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXCII. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 2863.

Tanacetum Parthenium, *C. H. Schultz*, über die *Tanacet.* p. 55. *Reich. fil.* l. c., p. 52.

Leucanthemum Parthenium, *Gr. & Godr.* Fl. de Fr. Vol. II. p. 145.

Pyrethrum Parthenium, *Sm.* Eng. Bot. No. 1231. *Fries*, Sum. Veg. Scand. p. 1.

Matricaria Parthenium, *Linn.* *Bab. Man. Brit. Bot.* ed. v. p. 178. *Hook. & Arn.* Brit. Fl. ed. viii. p. 57.

Leaves pinnate, with 3 or 4 pair of pinnæ; leaflets ovate, deeply pinnatifid or bipinnatifid; all the leaves except the uppermost ones (which are bitripinnatifid) stalked, finely pubescent. *Anthodes* corymbose, radiant. Pericline hemispherical; phyllaries with a blunt keel on the back, the exterior ones lanceolate, with the margins narrowly-scarious and pale; the inner ones oblong-strapshaped, white, scarious and lacerated at the summit. Florets of the ray short, flat, white, but much longer than the pericline. Achenes cylindrical-prismatic, enlarged upwards, equally 5-ribbed.

In hedge-banks and waste places. Common, and generally distributed, though possibly originally introduced, becoming scarce in Scotland.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock not creeping. Stem 1 to 2 feet high, copiously paniculately branched in the upper half, sparingly downy. *Anthodes* (including the ray) $\frac{1}{2}$ to $\frac{3}{4}$ inch across. Phyllaries more curved upwards than in the preceding species, and with a very strong central rib, and destitute of the brown margins of the two first species. Ray-florets shorter than the diameter of the disk. Achenes small, whitish, sub-pentagonal, all crowned with a membranous border at the summit. Plant green; leaves thin, finely downy, especially upon the petioles; phyllaries slightly downy on the exterior.

Common Feverfew.

French, *Chrysanthème Matricaire*. German, *Mutterkraut*.

This plant is so like the Chinese *Chrysanthemum*, that by some botanists it is scarcely distinguished from it; indeed a double variety with all white flowers is commonly

grown in our gardens. It was formerly valued as a tonic, and given for agues and low fevers; hence its common name, which is a corruption of "febrifuge." Among the recommendations in Gerarde's Herbal, we find the Feverfew extolled when dried and made into powder; and "two drams of it taken with honey or sweet wine, it purgeth by siege melancholy and flegme; wherefore it is very good for them that are giddie in the head, or which have the turning called *Vertigo*, that is, a swimming and turning in the head. Also it is good for such as be melancholike, sad, pensive, and without speech."

SPECIES IV.—**CHRYSANthemum TANACETUM.**

PLATE DCCXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXCVI.

Billot. Fl. Gall. et Germ. Exsicc. No. 1897.

Tanacetum vulgare, *Lin.* *Sm.* Eng. Bot. No. 1229. *Bab.* Man. Brit. Bot. ed. v. p. 180.

Hook. & Arn. Brit. Fl. ed. viii. p. 244. *Benth.* Handbook Brit. Fl. p. 299. *D. C.*

Prod. Vol. VI. p. 128. *Koch.* Syn. Fl. Germ. et Helv. ed. ii. p. 407. *Fries.*

Sum. Veg. Scand. p. 2. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 137. *C. H. Schultz.*

l. c., p. 52.

Leaves pinnate, with very numerous pairs of pinnae; leaflets oblong-strapshaped, deeply pinnatifid; lobes serrate or entire; lower leaves shortly stalked, the upper semi-amplexicaul, subglabrous. Anthodes corymbose, discoid. Pericline hemispherical, with the exterior phyllaries lanceolate, bluntly keeled on the back; inner ones oblong, obtuse at the apex, with scarious pale fawn-coloured margins. Marginal florets female, not longer than the tubular perfect ones of the disk, obliquely truncate at the apex, the ligule scarcely apparent, 3-toothed, yellow. Achenes cylindrical-prismatic, enlarged upwards, equally 5-ribbed.

In hedge-banks, roadsides, borders of fields, and dry pastures. Rather sparingly but generally distributed, though probably not native in many of its localities, especially those in the North of Scotland.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock creeping, stoloniferous. Stem erect, tough, 1 to 3 feet high, generally dull-purple, simple below, corymbosely branched at the apex in large examples, and terminated by a compact nearly simple corymb of numerous anthodes. Leaves with the lobes of the pinnatifid leaflets acute, serrate on the outside, with dots containing essential oil. Peduncles slender, naked, slightly thickened below the heads. Anthodes $\frac{1}{4}$ to $\frac{1}{2}$ inch across, bright-yellow. Clinanth hemispherical. Female florets sometimes absent. Achenes greenish-white, glabrous, frequently sprinkled with resinous dots, crowned by a short membranous uneven border. Plant dark-green, nearly

glabrous, or with distant scattered hairs, especially on the petioles and veins of the leaves.

Common Tansy.

French, *Tanaisie Commune.* German, *Rainfarn.*

The Tansy is a common plant in many parts of the country, being generally found here and there on the borders of fields and by roadsides, where the soil is chalky or sandy.

The herb is bitter, aromatic, and tonic, and its flavour is not unpleasant. It is occasionally used in the country as a domestic medicine in intermittent fevers, and also as a vermifuge, the leaves being generally made into an infusion which is taken as tea. The active properties of the plant reside in the essential oil, which gives it its strong and peculiar odour; but it likewise contains a bitter resinous matter, and an acid called *tanacetie acid*. The essential oil is obtained from the herb by distillation; it has been used as a vermifuge, but in one case with fatal results. Boerhaave held the plant in great esteem, and recommended it as a spice, saying, "this balsamic plant may supply the place of nutmegs and cinnamon, for I believe that Asia does not supply a plant of greater fragrance than the Tansy." It is very little cultivated at present, though its leaves are sometimes used in omelettes, and also for colouring other dishes. It was formerly eaten much in Lent, as the representative of the *bitter herbs* commanded to be eaten with the Paschal lamb; and Tansy puddings and Tansy cakes, made from the young leaves mixed with eggs, are still in favour with some people. Gerarde alludes to the use of it in cookery in his day; he says—"In the spring time are made with the leaves hereof newly sprung up, and with eggs, cakes, or Tansies, which be pleasant in taste and good for the stomacke. For if any bad humours cleave thereunto, it doth perfectly concoct them and carry them off. The root preserved with hony or sugar is an especiall thing against the gout, if every day for a certaine space, a reasonable quantity thereof be eaten fasting." It was likewise considered a specific in dropsy. Dr. Threlkeld relates a case of a soldier at Montpellier, who was cured of an obstinate dropsy by the decoction of Tansy alone. The same writer accounts for the habit of eating Tansy-cakes during Lent, on the ground that they "dissipate the flatulencies occasioned by the idle conceit of eating fish and pulse for forty days; but," says he, "I have seen several victims to superstition, who have broken an hale constitution by that presumptuous fasting, so that neither Tansy nor steel could repair it."

SUB-GENUS III.—TRIPLEUROSPERMUM. *C. II. Schultz.*

Clinanth hemispherical in fruit. Florets of the ray white, ligulate. Achenes all similar, trigonous or sub-tetragonous, with 3 corky ribs on the inner face, transversely rugose between the ribs, with 2 large glandular foveæ or pits at the apex on the back face, crowned by a membranous border all round.

SPECIES V.—**CHRYSANTHEMUM INODORUM.** *Linn.*

PLATES DCCXVII. DCCXV. II.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXXV. Figs. 1, 2, 3.**Billot, Fl. Gall. et Germ. Exsicc. No. 2864.**Tripleurospermum inodorum, C. H. Schultz, über die Tanacet. p. 32.**Matricaria inodora, Linn. Bab. Man. Brit. Bot. ed. v. p. 179. Hook. & Arn. Brit. l. p. 57.**Charnæmelum inodorum, De Vis. Reich. fl. l. c., p. 47.*

Flowering-stem more or less corymbosely branched, nearly simple. Leaves bipinnate, the secondary leaflets cut into setaceous or cylindrical segments or entire; middle and upper leaves sessile; all glabrous. Anthodes solitary at the extremity of the stem and branches, radiant. Clinanth hemispherical or shortly-conical in fruit. Pericline flattish, with the phyllaries strap-shaped, flat, with brown or fuscous scarious margins. Florets of the ray ligulate, much longer than the phyllaries, white. Achenes sub-triquetrous, with 3 corky ribs on the inner face, transversely rugose between the ribs, with 2 foveæ on the external space immediately below the raised border.

Var. *α, genuinum.*

PLATE DCCXVII.

*Pyrethrum inodorum, Sm. Eng. Bot. No. 760.**Matricaria inodora, Linn. D. C. Prod. Vol. VI. p. 53. Fries, Sum. Veg. Scand. p. 1.**Gr. & Godr. Fl. de Fr. Vol. II. p. 149.**Matricaria inodora, var. α, Bab. Man. Brit. Bot. ed. v. p. 179. Hook. & Arn. Brit. Fl. p. 257.**Tripleurospermum inodorum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 1026.*

Annual or biennial. Rootstock and barren shoots none. Stem erect, corymbosely branched towards the apex. Segments of the leaves setaceous or cylindrical-setaceous. Anthodes numerous in a lax corymb. Clinanth of the fruit hemispherical, with the breadth greater than the height. Scarious margins of the phyllaries denticulate. Achenes oblong, triquetrous, with 2 marginal corky ribs and 1 on the inner face, leaving conspicuous places between them, and in addition sometimes 2 slender corky ribs on the outer face.

Var. *β, maritimum.* *Pers.*

PLATE DCCXVIII.

*Pyrethrum inodorum, Sm. Eng. Bot. No. 979.**Tripleurospermum maritimum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 1226.*

Matricaria maritima, *Linn.* *Fries*, Sum. Veg. Scand. p. 1. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 149.

Matricaria inodora, β *maritima*, *Bab.* Man. Brit. Bot. ed. v. p. 179. *Hook. & Arn.* Brit. Fl. ed. viii. p. 257.

Perennial. Rootstock woody, branched, with numerous barren shoots; segments of the leaves very short, cylindrical, fleshy. Flowering-stems ascending, short, simple or sparingly corymbosely branched towards the apex. Anthodes few. Clinanth of the fruit conical, with the breadth and height about equal. Scarious margins of the florets generally entire. Achenes broadly-oblong, trigonous, with the 2 marginal corky ribs meeting the one on the inner face, and leaving scarcely any appreciable space between them, and a very narrow one on the outer face.

Var. α in cultivated ground and waste places. Very common. Var. β on rocky and shingly seashores, chiefly in the North.

Stem erect, 6 inches to 2 feet high. Leaves with elongated slender segments in var. α , shorter and thicker in var. β . Anthodes on long naked peduncles, scarcely thickened below the anthodes. Anthodes, including the ray, $\frac{3}{4}$ to $1\frac{1}{2}$ inch across in var. α , 1 to 2 inches in var. β ; disk slightly convex in flower, yellow, becoming hemispherical in fruit. Florets of the ray strapshaped, indistinctly 3-toothed or entire at the apex. Ovary with 2 green spherical glands which become pits or foveæ on the achenes. Achenes twice as long as broad, dark-brown with the ribs whitish, the foveæ on the outer face nearly black: rarely there are 3 foveæ or 1 by coalescence. Plant bright- rather dark-green, glabrous.

Var. β seems too intimately connected by intermediate forms with var. α to be entitled to rank even as a sub-species, though the extreme forms, such as those from the Scottish coast, are very different in habit. The segments of the leaves are much shorter, more fleshy; the flowering-stems much less branched, and generally not so tall; the clinanth more conical; the peduncles more thickened upward; the achenes larger, half as long again as broad instead of twice as long as broad, with the corky ribs much thicker and the crown larger; the plant deeper green, and the leaves more shining.

Scentless Mayweed.

French, *Chrysanthème Inodore.* German, *Geruchlose Kamille.*

SUB-GENUS IV.—MATRICARIA. *Linn.*

Clinanth elongate-conical in fruit. Florets of the ray white, sometimes absent. Achenes all similar, oblong-cylindrical, with 5 rather slender ribs on the inner face, and the back curved and

without ribs; epigynous disk oblique, sometimes with, sometimes without, a membranous border, which is most conspicuous in the achenes of the ray-florets.

SPECIES VI.—**CHRYSANTHEMUM CHAMOMILLA.** *E. Mey.*

PLATE DCCXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1235.

Leucanthemum Chamæmelum, *Lam.* Fl. Fr. Vol. II. p. 139.

Matricaria Chamomilla, *Linn.* *Sm.* Eng. Bot. No. 1232. *Bab.* Man. Brit. Bot. ed. v.

p. 179. *Hook. & Arn.* Brit. Fl. ed. viii. p. 258. *Benth.* Handbook Brit. Fl.

p. 296. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 416. *Fries*, Sum. Veg. Scand.

p. 1. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 149. *C. H. Schultz*, über die Tanacet.

p. 24. *Reich.* l. c., p. 47.

Stem very copiously corymbosely branched. Leaves bipinnate, the secondary leaflets cut into setaceous segments or entire; middle and upper leaves sessile; all glabrous. Anthodes solitary at the extremity of the stem and very numerous branches, radiant or rarely discoid. Clinanth elongate-conical in fruit. Pericline flattish, with the phyllaries flat, short, oblong-strap-shaped, yellowish with scarious concolorous margins. Florets of the ray ligulate, much longer than the phyllaries, white, rarely absent. Achenes flattish on the inner side with 5 ribs, curved on the outer and without ribs or foveæ.

In cultivated and recently disturbed ground. Not uncommon in England, especially in the neighbourhood of London. Rare in Scotland, where I have never seen it, except on the ballast-hills on the Fifeshire coast.

England, [Scotland,] Ireland. Annual. Summer and Autumn.

This plant bears a striking resemblance to slender forms of *C. inodorum*, but it is of a yellower green, generally much more branched, and with the branches and consequently the anthodes more regularly corymbosely disposed; the anthodes smaller, $\frac{1}{2}$ to $\frac{3}{4}$ inch across, with the ray shorter and reflexed immediately after flowering, which does not occur in *C. inodorum* until a later period; the disk is much more prominent while in flower, and afterwards becomes longer than broad; the leaves of the pericline are shorter, more scarious, and with the edges concolorous. The fruit is very different, not half the size of that of *C. inodorum*, grey, with the ribs slender, white. The whole plant is yellowish-green, glabrous, with the scent of chamomile.

Wild Chamomile.

French, *Matricaire Camomille.* German, *Aechte Kamille.*

This plant possesses many of the properties of the true Chamomile, and on the Continent it is frequently used as a substitute for it. Much of what is sold as the oil of Chamomile is distilled from its flowers, and in Finland it is given as a tonic in consumption. The flowers are less nauseous and bitter in taste than those of the true Chamomile.

GENUS X.—ANTHEMIS. *Linn.*

Anthodes heterogamous and radiant, rarely discoid, many-flowered. Clinanth hemispherical or conical, with paleæ. Pericline saucer-shaped or hemispherical, of numerous imbricated herbaceous phyllaries, sometimes scarious at the margin. Florets of the disk tubular, perfect, without auricles at the base enclosing the ovary, those of the ray ligulate, female or more rarely neuter. Achenes with ribs all round or on the inner face only, crowned by a large or small epigynous disk, often crowned with a raised generally oblique membranous border representing the pappus.

Herbs, with alternate finely-divided leaves. Anthodes generally rather large, with the florets of the disk yellow, those of the ray white, yellow, or rose-colour.

This genus derives its name from the Greek word *ανθεμον* (*anthemon*), a flower.

SUB-GENUS I.—EU-ANTHEMIS (ANTHEMIS, *Gay*).

Clinanth elongate-conical in fruit. Tube of the perfect florets compressed-winged. Achenes cylindrical-obconic, truncate at the apex, ribbed on both face and back; epigynous disk as broad as the top of the achene.

SPECIES I.—ANTHEMIS COTULA. *Linn.*

PLATE DCCXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. M.

Billot, Fl. Gall. et Germ. Exsicc. No. 1233.

Maruta Cotula, D. C. Prod. Vol. VI. p. 13.

Annual. Stem erect, simple, or several from the crown of the root, corymbosely branched at the apex. Leaves bipinnate (bipinnatifid), with the secondary leaflets (segments) cut into linear-acute segments, glabrous, not punctate. Peduncles striate, not enlarged beneath the anthodes. Anthodes very numerous, corymbose. Pericline sub-glabrous, with the phyllaries nearly equal, narrowly scarious and pale at the summit, where they are

not dilated. Clinanth conical at maturity, with linear-subulate acute firm paleae. Ray-florets white, almost always without styles. Achenes smoothish on the inner face, with 3 faint ribs, remotely-tuberculate and 7-ribbed on the back and sides; epigynous disk smooth, with a scarcely perceptible border.

In cultivated fields. Common in the South of England, less frequent in the North and in Scotland, and absent in the North of the latter country.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Stem 9 inches to 2 feet high, simple at the base in small specimens, but branched close to the ground in large ones, the top always corymbosely branched. Leaves closely resembling those of *Chrysanthemum inodorum* and *C. Chamomilla*, but with the segments broader, united together by narrow herbaceous strips, so that they are bipinnatifid rather than bipinnate, the segments generally very acute. Anthodes about 1 inch across, terminal, on long furrowed hairy or sub-glabrous leafless peduncles; disk yellow, convex in flower, elongating in fruit; ray of numerous oblong-strapshaped florets, soon reflexed after flowering. Achenes yellowish-white, bluntly 5-sided, 10-ribbed. Plant nearly glabrous, foetid.

The scales on the receptacle distinguish this from *Chrysanthemum inodorum* and *C. Chamomilla*.

Stinking Mayweed.

French, *Camomille Fétide*. German, *Stinkende Hunds-Kamille*.

This is one of the most troublesome weeds in gardens, and is easily recognized by its foetid odour; it is acrid, and will even blister the skin if held long in the hands. Toads are said to like this plant, but it is very displeasing to bees. It is a strong active bitter; a decoction given in the dose of a teacupful will produce copious vomiting and perspiration, and powerfully promotes the action of an emetic.

SPECIES II.—*ANTHEMIS ARVENSIS*. Linn.

PLATES DCCXXI. DCCXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2865.

Annual. Stems decumbent or ascending, much branched at the base, simple or slightly corymbosely branched at the apex. Leaves bipinnate (bipinnatifid), with the secondary leaflets cut into strapshaped acute segments (or only serrate in var. β), hairy, not punctate. Peduncles striate, densely pubescent, slightly enlarged immediately beneath the anthodes. Anthodes few on each main branch. Pericline hairy; phyllaries nearly equal, largely

scarious and pale at the summit, where the interior ones are dilated and often lacerate. Clinanth hemispherical or conical at maturity, with lanceolate acute paleæ. Ray-florets white, with styles. Achenes nearly smooth and equally ribbed all round; epigynous disk rugose, with a conspicuous border.

Var. α , *genuina*.

PLATE DCCXXI.

A. arvensis, Sm. Eng. Bot. No. 602.

Peduncles very slightly dilated at the apex; secondary leaflets (segments) elongated, toothed or pinnatifid, very slightly fleshy. Clinanth hemispherical-conical at maturity.

Var. β , *Anglica*.

PLATE DCCXXII.

Anthemis Anglica, Spr. Bab. Man. Brit. Bot. ed. v. p. 178. Hook. & Arn. Brit. Fl. ed. viii. p. 258.

A. maritima, Sm. Eng. Bot. No. 2370 (non Linn.).

Secondary leaflets (segments) of the leaves reduced to large teeth, fleshy. "Clinanth flat" (Sm. & Bab.).

In cultivated fields, by roadsides, and in waste places. Rather rare, but generally distributed, except in the North of Scotland, though more abundant in that country than *A. Cotula*. Var. β found on the seacoast at Sunderland by Mr. Robson, and more recently by Mr. Backhouse.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Stem much branched from the base, where it divides into numerous decumbent or ascending rarely erect branches 6 to 18 inches long; primary branches simple in small specimens, slightly and irregularly branched in large ones. Leaves resembling those of *A. Cotula*, but the segments are broader and shorter, so that the leaves appear less finely divided; sometimes the segments are very short and fleshy. Anthodes 1 to $1\frac{1}{2}$ inch across.

This may readily be confounded with *A. Cotula*, but the stems are very rarely erect and never so copiously corymbosely branched at the apex; the whole plant is thickly covered with hairs, and from their abundance is often white on the young leaves; the inner phyllaries are dilated at the apex, the ray-florets have styles, the pales are much broader and lanceolate-acuminate, not subulate. The achenes are not rugose on the sides and have the epigynous

disk resembling a flattened ring divided into segments by transverse impressed lines.

With *A. Anglica* I am unacquainted except from the specimens contained in the Smithian Herbarium, where there are two wild specimens from Sunderland, and a cultivated one from Mr. Robson's garden—the latter scarcely differing from the normal state of *A. arvensis*. The wild specimens have the clinanth convex at maturity, the paleæ project between the florets and are rather more pointed than in the var. α ; the pericline is more woolly; the leaves are much less divided, but not dotted, as erroneously described by Smith. I have specimens of var. α from Crookston, Edinburgh, which have the leaf-segments short and fleshy, approaching those of the so-called *A. Anglica*.

Corn Chamomile.

French, *Camomille des Champs*. German, *Acker Hunds-Kamille*.

SUB-GENUS II.—COTA. *J. Gay.*

Clinanth hemispherical in fruit. Tube of the perfect florets compressed, winged. Achenes compressed-tetragonal, narrow at the base, truncate at the apex, faintly ribbed on both face and back; epigynous disk as broad as the achene.

SPECIES III.—**ANTHEMIS TINCTORIA.** *Linn.*

PLATE DCCXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MX. Fig. 1.

Perennial. Stem erect or ascending, alternately branched. Leaves sub-glabrous above, somewhat woolly beneath, pinnate (pinnatipartite), with the rachis toothed between the leaflets; leaflets pinnatifid, with the lobes entire or serrate on the outer side and cuspidate. Peduncles striate, densely pubescent, scarcely thickened below the anthodes. Anthodes rather few. Pericline sparingly woolly; phyllaries unequal, narrowly scarious towards the summit, with a brown ciliated margin. Clinanth hemispherical at maturity, with lanceolate acuminate lacinated paleæ. Ray-florets yellow. Achenes subtetragonal, smooth, with 5 faint striae on each face; epigynous disk smooth, crowned by an elevated membranous margin.

In fields and stony places. Said to have occurred in the

counties of Essex, Northumberland, Fife, and Forfar; but it has not been found recently, and no doubt had been introduced.

[England, Scotland.] Perennial. Late Summer and Autumn.

Stem 1 to 2 feet high, branched so as to form a small bush. Leaves with the segments strapshaped, serrate or pinnatifid, all united by a green strip on each side of the rachis, which gives off processes between the segments. Peduncles long, leafless at the top. Anthodes 1 to $1\frac{1}{2}$ inch across. Achenes whitish. Plant dull-green, more or less hairy; the leaflets sparingly woolly beneath.

Ox-eye Chamomile.

French, *Camomille des Teinturiers*. German, *Farber Hunds-Kamille*.

The flowers of this plant afford a remarkably clear and good yellow dye, and can scarcely be distinguished from those of the corn marigold.

SUB-GENUS III.—ORMENIS. *J. Gay.*

Clinanth elongate-conical in fruit. Tube of the perfect florets cylindrical, enlarged at the base, which is persistent and envelops the fruit equally or on one side only. Achenes compressed-cylindrical, rounded at the apex, with 3 slender ribs on the inner face, smooth or nearly so on the back; epigynous disk much smaller than the greatest diameter of the fruit.

SPECIES IV.—**ANTHEMIS NOBILIS.** *Linn.*

PLATE DCCXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MI. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 261.

Chamomilla nobilis, *Godr.* Fl. de Lorr. Vol. II. p. 19.

Ormenis nobilis, *J. Gay*, in Fl. Par. ed. i. p. 398. *Coss & Germ.* Fl. Par. ed. ii. p. 491.

Perennial. Stems decumbent or ascending, alternately branched, rarely simple. Leaves bi- or tripinnate (bi- or tripinnatifid), the leaflets (segments) short, linear-subulate, approximate, sparingly hairy. Peduncles striate, densely pubescent. Anthodes few. Pericline sparingly woolly; phyllaries always adpressed, with broadly scarious white lacerate margins. Clinanth hemispherical at maturity, clothed with short lanceolate-strapshaped obtuse scarious paleae. Ray-florets white, rarely absent. Achenes cylindrical,

slightly enlarged upwards, rounded at the apex, which is embraced by the base of the tube of the corolla equally on both sides, with 3 striæ on the inner face, smooth on the back and sides; epigynous disk small, without a distinct crown.

On commons and pastures, particularly on gravelly soil. Rather common in the South of England, becoming rarer in the North; scarce and probably not native in Scotland, though found as far North as Orkney.

England, [Scotland,] Ireland. Perennial. Late Summer and Autumn.

Rootstock shortly creeping, much-branched. Stem rooting at the base; branches generally ascending only at the apex, rarely erect. Leaves more divided than in any of the preceding species of *Anthemis*, with the segments much shorter, finer, more numerous and closer together. Peduncles elongate. Anthodes $\frac{3}{4}$ to 1 inch across. Achenes very small, pale olive-brown, nearly smooth, except the 3 faint striæ on the inner face, the upper part remaining invested with the persistent base of the corolla; epigynous disk very small, with scarcely any prominent border. Plant greyish-green, more or less hairy or pilose.

Common Chamomile.

French, *Camomille Romaine*. German, *Romische Kamille*.

The use of this herb in medical practice is of great antiquity. Gerarde tells us that "the Egyptians have used it for a remedie against all cold agues, and they did therefore consecrate it, as Galen sayeth, to their deities." The flowers possess certain tonic and febrifugal qualities, and at one time had a great reputation in many disorders. They contain a bitter extractive matter and volatile oil, which also exist in the seeds. In ancient times the powder was much used in agues, and in modern times even Cullen speaks favourably of its effects. A simple infusion under the name of Chamomile tea, is, or was, a very common domestic remedy for indigestion and stomach complaints. Chamomile is cultivated largely in the neighbourhood of Mitcham, in Surrey, and in other places in the vicinity of London. It was formerly planted in garden walks, that it might be odoriferous to the tread; and it was to this practice that Falstaff alludes when he reminds the prince, that "though the Chamomile, the more it is trodden on, the faster it grows, yet youth, the more it is wasted, the faster it wears." Beside the use of Chamomile-flowers in infusion as a drink, their power of retaining heat has recommended them as a fomentation or cataplasm; and a popular remedy for face-ache and other pains is a fomentation of poppy-heads and Chamomile flowers.

GENUS XI.—DIOTIS. Desf.

Anthodes homogamous and discoid, many-flowered. Clinanth hemispherical or shortly conical, with paleæ. Pericline campanulate-hemispherical, of numerous herbaceous imbricated woolly phyl-

laries. Florets all tubular and perfect, the tube produced at the base into 2 spurs resembling auricles, which almost entirely envelop the ovary and adhere to it. Achenes compressed, rounded at the apex, ribbed, permanently invested with the corolla-tube; epigynous disk without a crown or pappus.

A white woolly herb with alternate oblong-lanceolate semi-amplexicaul, entire, or crenulated leaves, and corymbose anthodes of yellow flowers.

The derivation of the name of this genus of plants appears to be from *dis* (*dis*), two, and *otis* (*otis*), the ear,—two-eared, in allusion to the fruit invested with the tube of the corolla.

SPECIES I.—DIOTIS MARITIMA. *Coss.*

PLATE DCCXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXCVIII. Fig. 3.

Billot. Fl. Gall. et Germ. Exsicc. No. 1499.

D. candidissima, Desfont. D. C. Prod. Vol. VI. p. 34. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 159.

Santolina maritima, Linn. "MS." *Sm.* Eng. Bot. No. 141.

Athanasia maritima, Linn. Sp. Plant. p. 1182.

The only known species.

On sandy seashores a little to the north of Landguard Fort, Suffolk; near Carnore Point, county Wexford; from whence I am favoured with specimens by Mr. John Waddy. It formerly occurred in Cornwall, Devon, Dorsetshire, Isle of Sheppey, near Lowestoft, and in Anglesea, but is now extinct in all the localities on the Southern coast. Abundant on the shores of St. Ouen's Bay, Jersey.

England, Ireland. Perennial. Autumn.

Rootstock very long, woody, branched in a somewhat tufted manner at the apex. Stems felted-cottony, ascending, 6 inches to 1 foot long, rather thick, nearly simple except at the apex. Leaves oblong or oblanceolate-oblong, crenate, densely felted-cottony and white on both sides. Anthodes $\frac{1}{4}$ to $\frac{3}{8}$ inch across, in a dense terminal corymb; peduncles short, those of the terminal flowers very short. Phyllaries few, ovate, the inner ones broader, so densely felted on the exterior that they are undistinguishable, unless the one be raised from the other. Paleæ oval, acuminate. Achenes curved, smooth, with 5 thick ribs, the greater part embraced by the base of the corolla-tube, which descends on each side in an elongated auricle. Plant white or hoary.

Seaside Cotton-weed.

French, *Santoline.* German, *Cypressen Kraut.*

GENUS XII.—ACHILLEA. Linn.

Anthodes heterogamous and radiant, several or many-flowered, rarely discoid. Clinanth convex or elongate-conical, clothed with paleæ. Pericline hemispherical or campanulate-ovoid, of numerous imbricated herbaceous phyllaries with scarious margins. Florets of the disk tubular, perfect, the tube not produced into auricles at the base; those of the ray few, shortly ligulate and female. Achenes compressed, smooth on the faces; epigynous disk without a crown or pappus.

Herbs with alternate, sessile, serrated or pinnatifid or finely divided leaves. Anthodes rather small or small, with the florets of the disk yellow or white, those of the ray with the ligule sub-orbicular, white, yellow, or pink.

This genus of plants derives its name from Achilles, the hero of Grecian story.

SECTION I.—MILLEFOLIUM. Tournef.

Pericline ovoid. Florets of the ray shorter than the pericline. Clinanth elongate-conical at maturity.

SPECIES I.—ACHILLEA TOMENTOSA. Linn.

PLATE DCCXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXII. Figs. 2, 3.

Billot. Fl. Gall. et Germ. Exsicc. No. 1010.

Rootstock short, scarcely creeping, with abbreviated leafy stolons. Leaves narrowly strapshaped, pinnatipartite, with the lobes approximate, pinnatifid, with 2 or 3 short linear lobes in the lower leaves, the rachis entire between the lobes, simple in the upper. Anthodes in a dense terminal repeatedly compound corymb. Pericline ovoid, woolly. Florets all yellow, ray half as long as the pericline.

In dry hilly pastures, not native. It has been found on Spittle Hill, north-west of Balvie, Dumbartonshire; near Paisley, Renfrew; Auchlunkert, Banffshire; and near Newcastle, county Down. I have a specimen from the Rev. W. W. Newbould, labelled "North of Yorkshire. G. Francis."

[England, Scotland, Ireland.] Perennial. Late Summer and Autumn.

Rootstock short, branched, producing short stolons terminating in tufts of leaves. Flowering-stem erect from a decumbent base, 3 inches to 1 foot high, sparingly leafy, generally corymbosely branched at the apex. Anthodes $\frac{1}{6}$ inch across, very numerous, in a compact compound corymb. Plant dull-green, with the leaves slightly and the stem densely woolly.

Woolly Yellow Yarrow.

French, *Achillée Cotonneuse.* German, *Garbe.*

SPECIES II.—**ACHILLEA MILLEFOLIUM.** *Linn.*

PLATE DCCXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXVI.

Billot, Fl. Gall. et Germ. Exsicc. No. 1501.

Rootstock creeping, with rather long subterranean stolons. Radical leaves elliptical-strapshaped; stem-leaves strapshaped; all tripinnatifid or bipinnatifid, with the segments cut, the ultimate lobes linear-subulate, very acute; the rachis entire (rarely with a single undivided tooth between each of the segments), and so narrow between the primary segments that the leaves ought almost to be termed pinnate or bipinnate. Anthodes in a dense terminal compound corymb. Pericline ovoid, subglabrous, with the phyllaries woolly towards the margin. Ray-florets white or pink, half as long as the pericline.

In pastures, waste ground, borders of fields, &c. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock rather short, creeping, slender. Stems erect, 3 to 18 inches high, leafy, the leaves often with 2 or 3 small leaves in their axils. Radical leaves stalked, much longer than the stem-leaves; the uppermost stem-leaves less divided and with shorter segments. Anthodes $\frac{1}{4}$ inch across. Disk whitish or pink; ray-florets white, pink, or deep-rose. Phyllaries strongly keeled, with a brown or more rarely fuscous scarious margin; the ligule suborbicular, bluntly toothed at the apex. Plant dull-green; the stem and rachis of the leaves more or less woolly; the leaves hairy or, in shady situations, subglabrous.

Common Yarrow.

French, *Achillée Millefeuille.* German, *Schafgarbe.*

The flowers of this species of Yarrow are known to every country child, and may be found in almost every meadow in the summer time. It was formerly much

esteemed as a vulnerary, and its old names of "soldier's wound-wort" and "knight's milfoil," bear witness to this. The Highlanders still make an ointment from it, which they apply to wounds, and Professor Bromel states that milfoil-tea is held in much repute in the Orkney islands for dispelling melancholy!

Gerarde tells us that it is the very same plant wherewith Achilles cured the wounds of his soldiers. One of its common names among country people is "nose-bleed;" for the leaf being rolled up and applied to the nostrils causes a bleeding at the nose more or less copious. It is also called "old man's pepper," on account of the pungency of its foliage.

SPECIES III.—*ACHILLEA TANACETIFOLIA*. *All.?*

PLATE DCCXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXVII. Fig. 1.

A. dentifera, D. C. Prod. Vol. VI. p. 25. Gr. & Godr. Fl. de Fr. Vol. II. p. 163.

Rootstock elongate, creeping, with very long subterranean stolons. Radical leaves elliptical; stem-leaves elliptical-oblong; all pinnatipartite or bipinnatipartite, with the segments pinnatifid or serrated, the ultimate lobes short, triangular, acute; rachis of the radical-leaves rather broad, toothed between the primary segments, with the teeth serrate. Anthodes in a very large dense terminal compound corymb. Pericline ovoid, subglabrous, with the phyllaries woolly towards the margins. Ray-florets white (in British examples), about half as long as the pericline.

On moors. Ringing Low, five miles north of Sheffield; Cromford Moor, Derbyshire; probably escaped from cultivation.

[England.] Perennial. Late Summer and Autumn.

Stem erect, 2 to 4 feet high. Radical leaves and those of the tufts at the apex of the stolons very large, stalked, finely divided, the rachis with serrated teeth between the segments; stem-leaves narrower, with the segments serrated or pinnatifid-serrated, often with leaves in the axils. Anthodes $\frac{1}{2}$ inch across, white (generally purplish in Continental specimens), closely resembling those of *A. Millefolium*, but rather smaller, and having the phyllaries with narrower scarious margins, which are reddish-brown on the outer phyllaries, concolorous in the inner. Ray-florets more deeply toothed at the apex. Stem and rachis of the leaves thinly woolly; segments more or less hairy.

Tansy-leaved Yarrow.

French, *Achillée à Feuilles de Tanaisie*. German, *Edle Garbe*.

SUB-GENUS PTARMICA. *Tournef.*

Pericline hemispherical. Florets of the ray projecting beyond the disk for a distance nearly equal to the length of the pericline. Clinanth convex or hemispherical at maturity.

SPECIES IV.—**ACHILLEA DECOLORANS.** *Schrad.*

PLATE DCCXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXV. Fig. 1.

A. serrata, Sm. Eng. Bot. No. 2541.

Leaves oblong-strapshaped, serrate, the serratures acute, with a rather indistinct subdenticulate or entire cartilaginous margin, opaque, dotted, slightly hairy. Anthodes in a nearly simple corymb; pericline slightly woolly; phyllaries with pale margins; florets of the ray 5 to 6, ochreous, the projecting part rather shorter than the pericline.

Near Matlock, Derbyshire, but no doubt escaped from cultivation. It has also been reported from Somerset and York.

[England.] Perennial. Autumn.

Stem 12 to 18 inches high. Leaves dotted with leaves in their axils. Anthodes $\frac{1}{3}$ inch across, ray-florets more or less tinged with buff-yellow.

A. alpina of Koch and Reichenbach appears to differ only in the ray-florets being white and more numerous; but I have seen no specimens of that species, so do not venture to decide on its identity with *A. decolorans*.

Serrated Yarrow.

SPECIES V.—**ACHILLEA PTARMICA.** *Linn.*

PLATE DCCXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXVI.

Billot, Fl. Gall. et Germ. Exsicc. No. 1232.

Ptarmica vulgaris, D. C. Prod. Vol. VI. p. 23.

Leaves strapshaped, acute, serrulate, with distinct denticulate or entire cartilaginous margins, shining, subglabrous. Anthodes in a nearly simple corymb. Pericline slightly woolly; phyllaries with reddish-brown scarious margins. Florets of the ray 8 to 12, white, the ligulate portion as long as the pericline.

On heaths, meadows, and in bushy places, and by the sides of roads and ditches. Rather common, and generally distributed.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock creeping. Stem erect, 1 to 2 feet high, stiff, angular and pubescent towards the top, where it is generally branched. Leaves variable in breadth, sometimes very narrow, rather rigid, the serratures with a more or less evident usually denticulate cartilaginous margin. Anthodes $\frac{3}{4}$ inch across, rather few, in a somewhat lax flat-topped corymb. Outer phyllaries lanceolate, inner ones strapshaped obtuse, all with a prominent central nerve not reaching the apex. Ray-florets rather longer than broad, bluntly 3-toothed at the apex; disk-florets greenish-white. Plant dull-green, rather shining. Stem glabrous below, slightly downy above, and the upper leaves often with a few hairs.

Sneeze-wort Yarrow.

French, *Achillée Bouton d'Argent*. German, *Bertram Garbe*.

The young shoots of this plant are sometimes eaten as salad in spring; and the leaves are said to be made into tea in North Wales for the cure of headache; and a pleasant writer on wild flowers, who does not give us her name, says that she knows some old folks, who in their childhood drank no other tea, before the use of Chinese tea became so universal. The roots have a pungent, biting taste, and when chewed, cause a copious discharge of saliva, thereby relieving toothache; they are often sold in the shops for the pellitory of Spain. The double variety, sometimes called bachelor's buttons, is considered ornamental in gardens; but it should be admitted with caution the roots extending more than is desirable.

TRIBE II.—ARTEMISIEÆ.

Leaves alternate. Anthodes discoid, homogamous or heterogamous. Florets all tubular, those of the centre perfect or male, those of the circumference female or all perfect; female florets with the limb more or less oblique. Anthers with the lobes rounded or apiculate at the base. Style of the perfect flowers with linear branches furnished with a pencil of hairs. Achenes fusiform, sub-cylindrical or compressed, without ribs. Pappus none. Inflorescence paniculate, racemose or spicate.

GENUS XIII.—ARTEMISIA. Linn.

Anthodes homogamous or heterogamous, several-flowered, discoid. Clinanth flat or convex, naked or hairy, but without scales. Pericline hemispherical or ovoid or oblong-ovoid, of numerous imbricated herbaceous phyllaries with scarious margins.

Florets all tubular; those in the centre perfect or male, those of the circumference female, or all perfect. Achenes fusiform, compressed, without ribs; epigynous disk narrower than the top of the achene, without a crown or pappus.

Herbs with alternate generally broad and finely divided leaves. Anthodes small or rather small, generally very numerous, racemose or spicate, usually unilateral; the racemes generally combined into panicles. Florets yellow or purplish.

The name of this genus of plants has various derivations given for it. It is said by some authors to have been used by Artemisia, Queen of Caria, who gave it her name in honour of its virtues; others say it derived its name from Artemis, one of the names of Diana; while some suppose that the drooping and cypress-like character of some of the species procured it the name from Artemisia, the wife of Mausolus.

SECTION I.—ABSINTHIUM. *Tournef.*

Anthodes heterogamous; central florets perfect, those of the circumference female. Clinanth hairy.

SPECIES I.—ARTEMISIA ABSINTHIUM. *Linn.*

PLATE DCCXXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXIX. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 1895.

Stem herbaceous, erect, paniculately branched, with the branches ascending-erect. Leaves punctate, finely silky-pubescent on both sides, nearly white below; the lower ones stalked, with the petiole not auricled at the base; lamina twice or thrice pinnatipartite, with the ultimate segments flat, oblong-strapshaped, blunt, not apiculate. Anthodes very numerous, many-flowered, globose, shortly stalked, drooping, in rather lax racemes, arranged in a leafy panicle with erect branches. Pericline globose; phyllaries pubescent on the back, scarious at the apex, all nearly equal in length. Female florets dilated at the base above the fruit. Clinanth with long hairs.

In waste places and by roadsides, especially near the coast. Rather rare, but pretty generally distributed, except in the North of Scotland.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock woody, producing barren shoots with tufts of leaves, and flowering-stems 1 to 3 feet high. Leaves of the barren shoots and of the lower part of the stems tri-pinnatipartite, those in the

middle bi- and those in the upper part simply pinnatifid, those towards the upper part of the panicle often entire. Anthodes $\frac{1}{6}$ inch across or more. Florets yellow. Achenes small, obovate-ovoid, glabrous. Whole plant silky pubescent, aromatic.

Common Wormwood.

French, *Armoise Absinthe*. German, *Wermuth*.

This herb was highly esteemed by the ancients as a tonic and diuretic, and was also considered to promote digestion and to restore the appetite. The Greek and Roman physicians likewise gave it as a vermifuge. Our own forefathers held it in great esteem, though some of the uses to which it was applied originated in superstition, or in the accounts given of it by the old classical writers, then held as the fountains of all wisdom. It was supposed to counteract witchcraft and necromancy, and was called by the monkish herbalists *Cingulum Sancti Johannis*, that saint being said to have used it as a girdle. If a garland of it were thrown into the fire on Midsummer eve, certain mystic verses being repeated at the same time, it effectually protected the operator from all supernatural agencies or magical incantations for the space of a year. It was often hung up in houses to protect them from evil spirits, or with a view of expelling or destroying the insects and vermin with which the timber of old houses was so much infested. Tusser alludes to its value in both these cases:—

“While wormwood hath seed, get a handful or twaine,
To save againste March to make flea to refraine.
Where chamber is sweeped, and wormwood is strowne,
No flea for his life dare abide to be knowne.
Whatsoever is better, if physick be true,
For places infected than wormwood or rue?
It is as a comfort, for hart and the braine,
And therefore to have it, it is not in vaine.”

Gerarde is very discursive on the virtues of wormwood. After a long list of diseases for which he recommends its use, he says: “It helpeth them that are strangled with eating of mushromes or toad stools, if it be drunke with vinegre. And being taken with wine it is good against the poyson of *Ixia* (being a viscous matter proceeding from the thistle chamælion) and of hemlocke, and against the biting of the shrew mouse and of the sea dragon.” The wormwood is really a powerful aromatic herb, and, when taken in moderate doses, acts as a mild tonic, in the same way as do many vegetable bitters. In Wales it is frequently put into beer instead of hops, and is said to prevent it turning sour; the Wermuth beer of Germany is made in a similar manner. The drink known by the name of *Purl* is made by infusing wormwood in beer. The liquor so highly esteemed in France under the name of Absinthe, is prepared by infusing this plant in spirit, and adding spices and condiments to it. It is a most seductive and dangerous compound, and often betrays those who would shrink from being considered habitual spirit-drinkers. The ashes of the plant afford a large quantity of carbonate of potash, which at the present day is sold in the shops as Salt of Wormwood.

SECTION II.—ABROTANUM. *Tournef.*

Anthodes heterogamous; central florets perfect, those of the circumference female. Clinanth glabrous.

SPECIES II.—ARTEMISIA VULGARIS. *Linn.*

PLATE DCCXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2692.

Stem herbaceous, erect, paniculately branched, with the branches spreading-ascending. Leaves not punctate, glabrous above, hoary or white pubescent beneath, the lower ones stalked, with the petioles auricled at the base; pinnatipartite or bi-pinnatipartite with the ultimate segments lanceolate or ovate, flat, acute, apiculate. Anthodes very numerous, few-flowered, erect, sessile, in rather short dense spikes arranged in a leafy panicle with short ascending branches. Pericline oblong-ovoid; exterior phyllaries woolly on the back, scarious at the apex, the outer ones not much shorter than the inner. Female florets cylindrical-filiform. Clinanth glabrous.

On hedge-banks, borders of fields, roadsides, and waste places. Very common, and generally distributed.

England, Scotland, Ireland. Perennial Autumn.

Rootstock short, thick, woody, producing short leafy barren shoots and flowering-stems 2 to 4 feet high, generally purplish-red. Leaves of the barren shoots with the petioles winged, dilated, and commonly with 2 or 3 foliaceous segments at the base; lamina pinnatifid or pinnatipartite, with the lobes coarsely serrate; leaves of the lower part of the flowering-stem pinnatipartite or bi-pinnatipartite, the segments varying much in breadth and depth of division; uppermost leaves trifid or entire. Anthodes $\frac{1}{8}$ inch across, florets purplish or dull-yellow. Achenes oblong-ovoid, glabrous. Plant green, with the leaves white beneath, slightly aromatic.

Mugwort.

French, *Armoise Commune.* German, *Gemeiner Beifuss.*

This plant possesses no beauty; but the history of its old associations is so interesting that we can never see it without recalling them. Its common English name was undoubtedly given to it from the practice of putting it into the mugs from which our forefathers drank, to flavour their contents. Before the introduction of hops, it was used greatly for the purpose of infusing in beer, and on the Continent

is still occasionally employed as a culinary herb. Many valuable properties were attributed to it in bygone times; and even in late years some faith has been placed in its curative powers in epilepsy and convulsions. Dr. Withering tells us of a patient who was cured of hysteric fits of many years' duration by a dram of the leaves being administered four times a day. Gerarde writes: "Pliny saith that the traveller or wayfaring man that hath the herbe tied about him feeleth no wearisomnesse at all; and that he who hath it about him can be hurt by no poysonsome medicines nor by any wilde beast, neither yet by the sun itself; and also that it is drunke againste opium or the juyce of blacke poppy. Many other fantasticales devices invented by Poëts are to be seene in the works of the antient writers tending to witchcraft and sorcerie, and the great dishonour of God; wherefore I do of purpose omit them as things unworthy of my recording to your reviewing." We fear that a similar commentary might be appended to the chief part of the earlier editions of good old Gerarde's own herbal. Sheep are said to be very fond of the herbage of mugwort, and also of the roots. It may, perhaps, be the *Artemisia* of Pontus, which was celebrated among the ancients for fattening these animals. Pliny states that the sheep of Pontus became very fat, and were always without gall after eating this plant,—a circumstance highly improbable and not to be accepted.

SECTION III.—OLIGOSPORUS. *Cass.*

Anthodes heterogamous, central florets with the ovary abortive, those of the circumference female. Clinanth glabrous.

SPECIES III.—*ARTEMISIA CAMPESTRIS*. *Linn.*

PLATE DCCXXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1007 (bis).

Stem herbaceous, somewhat woody at the base, procumbent before flowering, at length ascending, paniculately branched, with the branches ascending. Leaves not punctate, at first pubescent, at length glabrous; the lower ones stalked, pinnate or bipinnate, with the ultimate segments linear, blunt, apiculate. *Anthodes* very numerous, few-flowered, erect, very shortly stalked, in elongate spikelike racemes arranged in a leafy panicle with elongate ascending branches. Pericline oblong-ovoid; phyllaries all glabrous, scarious at the tips, the outer ones much shorter. Female florets filiform, with an enlarged base. Clinanth glabrous.

On dry open sandy heaths, on the confines of Norfolk and Suffolk, as about Brandon, and near Thetford and Bury St. Edmunds, also near Belfast, but introduced.

England, [Ireland]. Perennial. Autumn.

Rootstock woody, producing tufts of short leafy barren shoots,

with the leaves on long stalks. Flowering-stems prostrate, becoming more and more upright as they come into flower, 1 to 2 feet long, much more slender and rigid than in the preceding species. Anthodes $\frac{1}{2}$ inch across. Florets yellow, the involucre often purple. Achenes oblong, glabrous. Plant dark-green, at length glabrous, not aromatic.

Field Southernwood.

French, *Armoise des Champs*. German, *Feld Beifuss*.

This plant is destitute of the pleasant scent of the Southernwood of our gardens—the “old man” of our childhood—though it belongs to the same family. The real Southernwood is a native of Southern Europe and Asia. It was known to the Greeks, and was called *Abrotonon* by them. Its botanical name is *Artemisia Abrotanum*. It is a very old favourite in gardens, and is mentioned by Turner and Gerarde as being cultivated in almost every English garden in their time.

SECTION IV.—SERIPHIDIUM. *Bess.*

Anthodes homogamous; florets all perfect. Stigmas enlarged into a ciliated disk at the summit. Clinanth glabrous.

SPECIES IV.—ARTEMISIA MARITIMA. *Linn.*

PLATES DCCXXXIV. DCCXXXV.

Stem herbaceous, erect, paniculately branched. Leaves not punctate, more or less cottony on both sides, the lower ones stalked, bipinnate, with the ultimate segments linear, blunt, not apiculate. Anthodes numerous, 3- to 5-flowered, erect or drooping, sessile, in rather dense spikes arranged in a leafy panicle with the branches drooping or erect. Pericline oblong-ovoid; phyllaries unequal, more or less cottony on the back, scarious at the edges. Florets all perfect. Clinanth glabrous.

Var. *α*, *genuina*.

PLATE DCCXXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXXIX. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 1008.

A. maritima, Sm. Eng. Bot. No. 1706. Gr. & Godr. Fl. de Fr. Vol. II. p. 133.

Reich. l. c., p. 75.

A. maritima et A. salina, Willd. D. C. Prod. Vol. VI. p. 103.

Branches of the panicle spreading, drooping at the apex. Anthodes erect or drooping.

Var. β , *Gallica*.

PLATE DCCXXXV.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MXXXIV. Fig. 1.**A. Gallica, Willd. D. C. Prod. Vol. VI. p. 102. Gr. & Godr. Fl. de Fr. p. 135.*

Branches of the panicle erect. Anthodes erect.

In salt marshes and by the banks of ditches, by the sea, and tidal rivers. Not uncommon in England, rare in Scotland, though extending as far North as Forfar and Wigtonshire. Vars. α and β usually growing together, and about equally common.

England, Scotland, Ireland. Perennial. Late Autumn.

Rootstock woody, flexuous, branched or simple, producing barren-shoots and flowering-stems, which are curved and almost woody at the base, then erect, 9 to 20 inches high, unbranched up to the panicle. Leaves of the barren shoots and lower part of the stem bipinnate, those of the upper part pinnate, the uppermost simple, or with a few segments at the base. Anthodes considerably longer than broad. Inner phyllaries broadly scarious. Florets yellowish or reddish, usually five in number. Style with the branches terminated by semicircular disciform ciliated stigmas. Plant varying much in pubescence, generally quite hoary.

Var. β has the branches usually shorter and more compactly flowered as well as erect; but there is no other character by which it may be separated from var. α . Both varieties are in fact very variable.

*Sea Wormwood.*French, *Armoise Maritime*. German, *Meerstrands Beifuss*.

This plant is found on salt marshes and moist cliffs. It has acquired a reputation for fattening cattle, from the fact that animals feeding on the pastures where it grows gain flesh; but it is probably the richness of the pasture itself, and not the presence of the wormwood, that produces this effect.

Withering tells us that it was formerly an ingredient in distilled waters, and was at one time beaten up with thrice its weight of sugar, and formed into a conserve. It possesses the same properties as the former species, but in a less degree. Withering quotes Threkel, who says, that in "Ireland the country people make it into sheaves and bring it in cars out of the adjacent counties of Meath and Louth to Dublin, of which alehouse keepers make their purl, great consumption of which is made in winter mornings."

TRIBE III.—GNAPHALIEÆ.

Leaves alternate. Anthodes generally heterogamous and discoid. Florets all tubular, the exterior ones generally filiform

and female. Anthers with the lobes produced into tails at the base. Branches of the style in the fertile flowers linear-convex externally, flat internally, without a pencil at the apex. Achenes cylindrical or compressed, without ribs. Pappus hairy, rarely absent, at least in the perfect florets.

GENUS XIV.—**FILAGO.** *Tournef.*

Anthodes heterogamous, discoid, several-flowered. Clinanth cylindrical or conical, or flattened at the summit, naked in the centre, but with paleæ resembling the phyllaries at the circumference. Pericline ovate-prismatic, 5-sided, of rather few imbricated concave or keeled scarious phyllaries, arranged in several rows. Florets all tubular, those in the centre perfect, surrounded by several rows of female florets with filiform corollas, situated in the axils of paleæ resembling the phyllaries. Achenes oblan-ceolate-fusiform or -ovoid, compressed, papillose. Pappus of the fertile flowers of filiform hairs, that of the external flowers caducous or absent.

Annual herbs, with alternate woolly leaves and anthodes arranged in heads or clusters, with proliferous branches springing from beneath them. Phyllaries grey, brown, or yellowish.

The name of this genus of plants comes from the word *Filum*, a thread, in allusion to the cottony fleecy covering of the plants.

SECTION I.—**GIFOLA.** *Cass.*

Pericline 5-angled-pyramidal, with the phyllaries opposite, acuminate or cuspidate, in 5 rows, not spreading like a star when the fruit is mature. Clinanth elongated, filiform. Anthodes woolly at the base, collected into compact spherical clusters.

SPECIES I.—**FILAGO GERMANICA.** *Linn.*

PLATE DCCXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLV. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc.

F. canescens, Jord. Obs. Pl. Nouv. etc., Frag. iii. p. 202.

F. Germanica, var. α, Hook. & Arn. Brit. Fl. ed. viii. p. 249.

F. Germanica, β canescens, Gr. & Godr. Fl. de Fr. Vol. II. p. 192.

Gnaphalium Germanicum, Sm. Eng. Bot. No. 946.

Stems erect or ascending, usually simple below, proliferously branched at the apex, where a pair of ascending branches are pro-

duced immediately below the terminal cluster of anthodes; these branches often again proliferously branched. Leaves strapshaped-lanceolate, tapering to the apex. Anthodes in the primary cluster 20 to 40, half sunk in cottony wool, not overtopped by the leaves immediately beneath it. Pericline pyramido-conical, with 5 angles, the five sides not furrowed; phyllaries cuspidate, with yellow scarious glabrous points. Whole plant with grey or hoary cottony wool.

In dry fields and banks. Very common in England, less so in Scotland, and not found North of Ross-shire.

England, Scotland, Ireland. Annual. Autumn.

Stem single or several from the crown of the root, 3 inches to 1 foot high, generally simple, but sometimes racemosely-branched in very luxuriant specimens. Leaves narrow, often slightly undulated. Clusters of anthodes sessile, spherical, about $\frac{1}{2}$ inch in diameter, almost always with 2 branches springing from beneath it on opposite sides, these terminated by a smaller cluster, which also has frequently dichotomous proliferous branches from beneath it. Anthodes $\frac{1}{8}$ inch long. Phyllaries folded. Female flowers generally without pappus, perfect ones with a pappus of denticulated hairs as long as the phyllaries. Achenes very minute, olive, slightly shining. Whole plant hoary white or grey.

Common Cudweed.

French, *Cotonnier Commun.* German, *Deutsches Schimmelkraut.*

This abundant little annual is found very constantly on waste places and meadows. It has an erect stem of six or eight inches high, on the top of which is a downy globular head of flowers of pale yellow: from immediately beneath this head spring several branches, each terminated by a similar head of flowers. This singular mode of growth caused the old botanists to call this plant *Herba impia*, as if the offspring were undutifully exalting themselves above the parent.

SPECIES II.—**FILAGO APICULATA.** *G. E. Sm.*

PLATE DCCXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLV.

Billot, Fl. Gall. et Germ. Exsicc. No. 37 *tr.* *G. E. Smith,* Phyt. 1846, p. 575.

F. lutescens, *Jord.* Obs. Pl. Nouv. etc, Frag. iii. p. 201.

F. Germanica, var. β , *Hook. & Arn.* Brit. Fl. ed. viii. p. 249.

F. Germanica, var. α , *lutescens,* *Gr. & Godr.* Fl. de Fr. Vol. II. p. 192.

Stems erect or ascending, usually simple below, proliferously branched at the apex, where a pair of ascending-erect branches or a single one is produced immediately below the terminal cluster of anthodes: these branches often again proliferously branched.

Leaves strapshaped-oblanceolate or oblong-oblanceolate, apiculate. Anthodes in the primary cluster 10 to 20, half sunk in cottony wool, overtopped by 1 or 2 leaves immediately beneath it. Pericline sharply-angled pyramidal, with the five sides grooved; phyllaries boat-shaped, acuminate, with red scarious glabrous points. Whole plant with yellowish cottony wool.

In sandy fields and by roadsides. Rather rare. It has occurred in the counties of Hants, Surrey, Herts, Essex, Suffolk, Norfolk, Cambridge, and York, and is no doubt often passed over as *F. Germanica*.

England. Annual. Autumn.

Very like *F. Germanica*, but generally with the stems taller, more slender and flexuous. Whole plant much yellower. Leaves much broader, and slightly narrowed towards the base on the main stem. Clusters of anthodes with fewer flowers. Anthodes larger, more sharply 5-angled; the phyllaries more gradually pointed, with the midrib purplish-red and the margins at the apex pale-red.

Red-tipped Cudweed.

SPECIES III.—**FILAGO SPATHULATA.** *Presl.*

PLATE DCCXXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLV. Fig. 3.

Billot, Fl. Gall. et Germ. Exsicc. No. 37 (bis) and 390.

Jord. Obs. Pl. Nouv. etc., Frag. iii. p. 199.

F. Jussieui, Coss & Germ. Ann. Sc. Nat. ser. ii. Vol. XX. p. 284.

F. Germanica, var. *spathulata*, *D. C. Prod. Vol. VI. p. 247. Hook. & Arn. Brit. Fl. ed. viii. p. 249.*

Central stem short, ascending; lateral stems spreading, procumbent, all proliferously branched at the apex, where there are 2 to 5 ascending-spreading branches produced immediately below the terminal clusters of anthodes; these branches often again proliferously branched. Leaves oblanceolate, apiculate. Anthodes in the primary cluster 8 to 15, overtopped by 2 to 5 leaves, which spread and resemble an involucre. Pericline sharply-angled pyramidal, with the five sides deeply grooved; phyllaries boat-shaped, longly-acuminate, with straw-coloured scarious glabrous points. Whole plant with hoary silky wool.

In sandy fields and waste places and by roadsides. Not uncommon in the South-east of England, where it has occurred in Dorset, Hants, Sussex, Kent, Surrey, Herts, Essex, and Cambridge.

England. Annual. Autumn.

This plant also bears a superficial resemblance to *F. Germanica*; but whatever opinions may be entertained regarding *F. apiculata*, there cannot be the slightest doubt that *F. spathulata* is a ver-species, totally distinct from *F. Germanica*. The primary stems are rarely above 3 inches long, and give off spreading lateral branches equaling or exceeding it in length. The leaves are much less undulated, broader and more narrowed towards the base, and silky rather than cottony. The clusters are larger; the anthodes considerably larger, more separate, with the five angles much more prominent, surrounded by spreading leaves, sometimes forming nearly as perfect an involucre as that surrounding the clusters of *Evax*. The phyllaries are more gradually attenuated, and have the extreme points more curved outwards. The wool in which the anthodes are sunk only covers their base instead of coming half-way up.

Spathulate Cudweed.

SECTION II.—OGLIFA. *Cass.*

Pericline 5-angled-pyramidal, with the phyllaries mostly alternate, not cuspidate, in 1 or 2 rows, spreading like a star when the fruit is mature. Clinanth short, flattened at the apex. Anthodes grouped in ovoid or subglobular lax clusters.

SPECIES IV.—**FILAGO MINIMA.** *Fries.*

PLATE DCCXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLVI. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 39.

F. montana, *D. C.* Prod. Vol. VI. p. 2248 (non *Linn.*).

Gnaphalium minimum, *Sm.* Eng. Bot. No. 1157.

G. montanum, *Huds.* Fl. Angl. p. 362.

G. arvense, *Willd. Benth.* Handbook Brit. Fl. p. 304 (non *Linn.* Herb.).

Stems erect, simple or with short lateral branches in the lower part, somewhat proliferously branched at the apex, where 2 to 3 ascending branches are produced from immediately below the terminal clusters: these branches are sometimes again proliferously branched, but as there is usually only a single branch, the clusters of anthodes appear to be arranged in lax spikes. Leaves elliptical-linear, tapering towards the apex. Anthodes in each cluster 3 to 6, not sunk in wool, not overtopped by the leaves immediately beneath them. Pericline conical-pyramidal; phyllaries concave, lanceolate, blunt, cottony on the back, with glabrous brownish points. Female florets in the axil of, but not rolled up in, the paleæ. Whole plant with grey or hoary cottony wool.

In dry fields, by roadsides, on waste places and wall-tops. Rather scarce, but generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Annual. Autumn.

Stem wiry, 1 to 9 inches high, solitary or several from the crown of the root, sometimes unbranched except in the upper half, sometimes with short branches almost from the base; branches from beneath the primary cluster and from a little below it elongated, simple or again dichotomous, with clusters of anthodes remotely arranged in lax spikes on the ultimate branches. Clusters about $\frac{1}{4}$ inch in diameter, rather lax. Anthodes $\frac{1}{6}$ inch long. Phyllaries spreading when the fruit is ripe and densely cottony.

Slender Cudweed.

German, *Kleinstes Schimmelkraut.*

SPECIES V.—**FILAGO GALLICA.** Linn.

PLATE DCCXL.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLVII. Fig. 1.

Billot. Fl. Gall. et Germ. Exsicc. No. 40.

Logfia Gallica, *Coss & Germ.* Ann. Sc. Nat. ser. ii. Vol. XX. p. 290. *Reich.* l. c.

L. subulata, *Cass.* *Gr. & Godr.* Fl. de Fr. Vol. II. p. 194.

Gnaphalium Gallicum, *Huds.* *Sm.* Eng. Bot. No. 2369. *Benth.* Handbook Brit. Bot. p. 304.

Stem erect, much branched, some of the branches proliferous, others not; branches again branched, ascending-spreading, with the heads remotely arranged in lax spikes on the ultimate branches. Leaves linear-subulate, attenuated towards the apex. Anthodes in the clusters 2 to 6, not sunk in wool, overtopped by the leaves immediately beneath them. Pericline conical-pyramidal; phyllaries concave, lanceolate, subacute, cottony on the back, with glabrous brownish points. Outer row of female florets with the ovary rolled up in the outer paleæ of the clinanth. Whole plant grey, with silky wool.

In sandy fields at Berechurch, near Colchester, Essex; formerly found at Castle Hedingham, near Halsted, in the same county, but has not been recently looked for there. It also has occurred in Herts and Berkshire; and the Rev. W. W. Newbould informs me there is a specimen in the Banksian Herbarium collected by Lightfoot near Iver, Bucks.

England. Annual. Autumn.

Stem slender, wiry, 3 to 9 inches long, the branches elongated-spreading. Leaves very slender, crowded. Anthodes $\frac{1}{6}$ inch long. Achenes of the outer row of female florets so tightly folded up in the paleæ that they remain attached to the plant until the fall of the scales. Whole plant silky.

Narrow-leaved Cudweed.

French, *Cotonnier en Alène*. German, *Französisches Schimmelkraut*.

GENUS XV.—GNAPHALIUM. Linn.

Anthodes heterogamous or diœciously homogamous, several- or many-flowered, discoid. Clinanth flat or convex, naked. Pericline hemispherical, campanulate or shortly cylindrical, of imbricated flattish scarious frequently coloured phyllaries arranged in several rows. Florets all tubular, female ones with filiform corollas; none of them in the axils of paleæ. Achenes sub-cylindrical or fusiform. Pappus of hairs arranged in a single row.

Cottony annuals or perennials with alternate entire leaves. Anthodes solitary or in corymbs or clusters, with the phyllaries scarious, grey, brown, yellow, white, or rose-colour. Florets yellowish.

The name of this genus of plants is said to come from the Greek word *γραφεύς* (*gnapheus*), a fuller, certain species being soft and woolly as the nap of cloth, and according to some writers, used as a substitute for cotton or flax in filling couches and mattresses; and hence called *Cotton weed*.

SECTION I.—EU-GNAPHALIUM.

Anthodes heterogamous. Florets of the centre perfect, those of the circumference female, disposed in several rows. Pappus of capillary hairs free to the base and falling off separately at maturity.

SPECIES I.—GNAPHALIUM ULIGINOSUM. Linn.

PLATE DCCXLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLVII(I). Figs. 2, 3.

Billot, Fl. Gall. et Germ. Exsicc. No. 42.

Annual. Stem ascending or decumbent, much branched. Leaves not amplexicaul, oblanceolate-strapshaped or strapshaped, cottony on both sides, rarely glabrous. Anthodes collected into cylindrical-ovoid dense terminal heads, overtopped by the leaves beneath them. Pericline ovate-ovoid; phyllaries unequal, scarious, light-brown. Achenes smooth, glabrous or papillose.

Var. α , *genuinum*.

Achenes glabrous.

Var. β , *pilulare*. Koch.

G. pilulare, *Wahl. Fl. Lapp.* p. 205.

G. uliginosum, *Gr. & Godr. Fl. de Fr.* Vol. II. p. 188.

Achenes with hair-like papillæ.

In damp fields, by roadsides, and in places inundated in winter. Very common, and generally distributed. Var. β I have seen only from Toft, Cambridgeshire; but it may be common, as it is only distinguishable by the achenes.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Stem 2 to 9 inches long, much branched from the base; the branches diffuse, flexuous, spreading, cottony. Heads of anthodes sessile, surrounded and intermingled with leaves. Pericline $\frac{1}{2}$ inch long; phyllaries shining, glabrous except at the base, where they are woolly. Florets yellowish-brown. Achenes olive. Plant hoary, densely clothed with cottony hairs.

Marsh Cudweed.

French, *Gnaphale des Marais*. German, *Sumpf Ruhrkraut*.

SPECIES II.—**GNAPHALIUM LUTEO-ALBUM.** *Linn.*

PLATE DCCXLII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLVII(I). Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 43.

Annual. Main stem erect, lateral ones decumbent at the base; all usually unbranched up to the corymb. Lowest leaves oblanceolate, obtuse; stem-leaves amplexicaul, strapshaped, acute, all cottony on both sides. Anthodes in leafless clusters, arranged in a terminal corymb, exceeding the leaves at their base. Pericline ovoid; phyllaries all equal, scarious, straw-colour. Achenes papillose, not hairy.

In sandy fields and by roadsides. Formerly found in Cambridgeshire; said also to have occurred at Eriswell, Suffolk; Larlingford, Norfolk; and near Bognor, Sussex: also at Belfast. Probably not wild in any of these stations, but truly so in Jersey and Guernsey.

[England, Ireland,] Channel Islands. Annual. Autumn.

Stem 3 to 18 inches high, sometimes solitary in small specimens, but generally dividing at the base into several, which rarely branch again unless the main shoot be injured. Leaves slightly undulated at the margins. Anthodes half sunk in wool, not intermingled with leaves. Pericline $\frac{1}{2}$ inch long, campanulate; phyllaries thin, broadly scarious towards the sides and apex, shining, glabrous. Florets dull-red. Achenes brown, rough with small tubercles. Whole plant hoary, very densely clothed with cottony hairs.

Jersey Cudweed.

French, *Gnaphale Jaunâtre.* German, *Gelblichwasses Ruhrkraut.*

SECTION II.—GAMOECHÆTA. *Wedd.*

Anthodes heterogamous. Florets of the centre perfect, those of the circumference female, disposed in several rows. Pappus of capillary hairs united into a ring at the base and falling off united at maturity.

SPECIES III.—GNAPHALIUM SYLVATICUM. *Linn.*

PLATE DCCXLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMIL. Fig. 1.

Billot. Fl. Gall. et Germ. Exsicc. No. 41.

G. sylvaticum, var. α , rectum, *Hook. & Arn.* Brit. Fl. ed. viii. p. 247.

G. rectum, *Sm.* Eng. Bot. No. 124.

Perennial. Rootstock producing short leafy barren shoots and 1 or more erect simple flowering-stems. Lowest leaves linear-ob lanceolate, acute; stem-leaves not amplexicaul, linear, all glabrous above, silky-white beneath. Anthodes in clusters or solitary, subsessile, in a long leafy interrupted spike, or more rarely a spike-like panicle, usually occupying half the stem or more. Pericline cylindrical-campanulate; phyllaries unequal, the inner ones scarious, with a green stripe in the middle, margined with dark-brown, as long as or a little longer than the florets and pappus. Achenes cylindrical, hispid. Pappus reddish-white.

In fields, heaths, and open woods, and by roadsides. Common, and generally distributed in Scotland; more rare in England, especially in the South.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock short, somewhat woody, slightly branched. Stems 3 to 18 inches high, stiff, cottony. Leaves of the barren shoots and those at the base of the flowering-stems much attenuated towards the base, so as to be sub-petiolate; stem-leaves very narrow.

Anthodes $\frac{1}{4}$ inch long, in a spike-like raceme or panicle, interrupted towards the base, dense and blunt at the apex. Achenes pale-olive, very slender, tuberculate. Upper side of the leaves deep-green, under side hoary-white with silky pubescence.

Upright Cudweed.

French, *Gnaphale des Bois*. German, *Wald Ruhrkraut*.

SPECIES IV.—**GNAPHALIUM NORVEGICUM.** *Gunn.*

PLATE DCCXLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMIL. Fig. 2. ?

Billot, Fl. Gall. et Germ. Exsicc. No. 140.

G. sylvaticum, β *Norvegicum*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 247.

G. sylvaticum, *Sm.* Eng. Bot. No. 913.

Perennial. Rootstock producing short leafy barren shoots or solitary erect simple flowering-stems. Lowest leaves oblanceolate, those in middle of stem largest, those in the inflorescence suddenly much smaller and narrower; all acute, cottony on both sides. Anthodes subsessile in clusters or solitary, collected into a short terminal spike or spike-like panicle, leafy towards the base, not occupying more than one-third of the stem. Pericline cylindrical-campanulate; phyllaries unequal, the inner ones scarious, with an olive stripe and dark-brown scarious margins, shorter than the pappus and expanded florets. Achenes fusiform-cylindrical, hispid. Pappus white.

On alpine rocks. Very rare. I have only seen it on Lochnagar, Aberdeenshire; but it has also been found at the head of Canlochan Glen, Forfarshire; on Ben Chat, five miles north of Blair Athole, and mountain north of Loch Ericht, Perthshire; and on Ben Wyvis, Ross-shire.

Scotland. Perennial. Late Summer and Autumn.

Very like *G. sylvaticum*, but the leaves are much broader, more evidently 3-nerved, more distant, nearly equal in breadth up to the commencement of the spike, immediately below which they are rather crowded, and then those in the spike abruptly become much shorter and narrower than those beneath; the rootstock in the specimens I have seen has no barren shoots; the spike is shorter and more compact; the phyllaries much darker towards the margins, shorter in proportion to the pappus; the achenes larger and more fusiform, darker brown; the pappus nearly pure white instead of reddish-white; the leaves hoary on both sides.

Highland Cudweed.

French, *Gnaphale de Wahlenberg*. German, *Norwegisches Ruhrkraut*.

SPECIES V.—**GNAPHALIUM SUPINUM.** *Linn.*

PLATE DCCXLV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLII. Fig. 2.*Billot.* Fl. Gall. et Germ. Exsicc. No. 1006.

Perennial. Rootstock producing numerous short leafy cæspitose barren shoots and erect simple flowering-stems. Lowest leaves oblanceolate-linear, those of the stem linear-acute, all cottony on both sides. Anthodes 1 to 7, in a short terminal head-like spike or in a few-flowered raceme, at first curved, ultimately erect. Pericline campanulate; phyllaries nearly equal, scarious, with an olive stripe in the middle and brown scarious margins, nearly as long as the pappus and expanded florets. Achenes fusiform-cylindrical, compressed, smooth, finely-hairy.

Var. α , *genuinum*.

Anthodes sessile or subsessile, in a short terminal spike or head.

Var. β , *fuscum*. *Scop.*

Anthodes stalked, in a rather lax raceme.

On rocks, and by the sides of streams on mountains. Not uncommon throughout the higher Highland mountains. Vars. α and β occur together, and pass insensibly into each other.

Scotland. Perennial. Late Summer and Autumn.

Plant growing in small tufts. Stems $\frac{1}{2}$ to 8 inches high, very cottony towards the top. Anthodes $\frac{1}{4}$ inch long, broader than in the two preceding, with the outer scales longer in proportion; the inner ones more acute, and of thinner texture; the outer ones with the wool towards the base coming further up. Female florets in only one row. Achenes grooved on the inner face, clothed with short white hairs.

Varieties α and β pass insensibly into each other.*Dwarf Cudweed.*French, *Gnaphale Petite*. German, *Niedriges Ruhrkraut*.SECTION III.—**ANTENNARIA.** *R. Br.*

Anthodes homogamous, diœcious. Florets of the sub-male plants with the anthers longer than the tube; style usually undivided; pappus of denticulate clavate hairs. Florets of the female plants without anthers; style 2-cleft; pappus of capillary hairs united into a ring at the base and falling off united at maturity.

SPECIES VI.—GNAPHALIUM MARGARITACEUM. *Linn.*

PLATE DCCXLVI.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLI. Fig. 1.**Antennaria margaritacea, R. Brown. Bab. Man. Brit. Bot. ed. v. p. 183. Hook. & Arn. Brit. Fl. ed. viii. p. 246. D. C. Prod. Vol. VI. p. 270.*

Rootstock not producing leafy barren shoots. Stems erect, herbaceous, simple below, corymbosely branched at the top. Leaves numerous, all elliptical-strapshaped, acute. Anthodes numerous, in a compound corymb. Pericline of the male plant globose; phyllaries strapshaped, brown; the outer ones woolly and the inner ones glabrous, both with a large oval concave plaited glabrous pure-white appendage or lamina rounded at the apex; florets all with abortive ovaries and no styles. Pericline of the female plant roundish-bells shaped, with the lamina of the scales ovate-lanceolate, equalling the pappus; florets, except a few in the centre which are perfect, without any anthers.

In meadows, and by the banks of rivers. Naturalized in several places, especially in the counties of Monmouth, Glamorgan, and Merioneth. In Scotland, abundant on Blair's Inch, Aberdeen; near Edinburgh; and by the banks of the Yarrow, Selkirkshire.

[England, Scotland.] Perennial. Autumn.

Rootstock shortly stoloniferous. Stem 1 to 3 feet high, thick, very leafy. Leaves 2 to 3 inches long, densely cottony beneath, at first floccose, but afterwards glabrous above, tapering at both ends, the upper ones at least acute, the lower ones decayed by the time of flowering. Anthodes $\frac{3}{8}$ to $\frac{1}{2}$ inch across, woolly at the base, with the exposed part of the phyllaries pure dim-white; florets yellow. Anthodes of the female plant larger and less globular than in the male. Corolla yellowish. Achenes fusiform, papillose. Hairs of the pappus very slender in the female plant, while those of the short abortive ovary of the male plant are distinctly enlarged upwards, and furnished with thick blunt denticulations pointing upwards.

All the specimens collected in Britain which I have seen have been male plants; but the one figured in Eng. Bot., No. 2018, is a female, to which plate, in the present edition, a portion of the corymb of the male plant has been added.

*Pearly Everlasting.*French, *Gnaphale Perlée*. German, *Perlkopfiges Ruhrkraut*.

This pretty plant is frequently cultivated in the gardens both of England and the Continent, and is said to have been introduced from America about the sixteenth

century. Its enduring qualities render it valuable through the winter; for though the flowers are less brilliant than those of the exotic species, they are equally lasting, and retain their appearance for years.

SPECIES VII.—**GNAPHALIUM DIOICUM.** *Linn.*

PLATES DCCXLVII. DCCXLVIII.

Antennaria dioica, *Gärtn. Bab. Man. Brit. Bot. ed. v. p. 182. Hook. & Arn. Brit. Fl. ed. viii. p. 246. Gr. & Godr. Fl. de Fr. Vol. II. p. 189. D. C. Prod. Vol. VI. p. 269.*

Rootstock with procumbent barren shoots with obovate or oblanceolate blunt leaves. Flowering - stems erect, herbaceous, with rather few strapshaped or elliptical erect leaves, the uppermost ones at least acute. Anthodes few, shortly stalked, in a head-like nearly simple corymb. Pericline of the male plant depressed-globose; phyllaries strapshaped, brown, the outer ones woolly, the inner ones glabrous, both with a large oblanceolate flattish white or rose-coloured lamina rounded at the apex; florets all with abortive ovary and no style. Pericline of the female plant bellshaped, with the lamina of the phyllaries, especially of the inner ones, more elongated than in the male, shorter than the pappus; florets all without anthers.

Var. α , *genuinum*.

PLATE DCCXLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLI. Figs. 2, 3.
Billot, Fl. Gall. et Germ. Exsicc. No. 44.

Leaves glabrous above, woolly-white beneath.

Var. β , *hyperboreum*. *D. C.*

PLATE DCCXLVIII.

G. hyperboreum, *Don, Hort. Cant. ed. vii. p. 237.*
Antennaria hyperborea, *D. Don, Eng. Bot. Supp. No. 2640.*

Leaves woolly both above and beneath, broader than those of var. α .

On heaths, sandy pastures, and alpine rocks. Common, and generally distributed in upland districts; rare in the South of England. Var. β in the Isle of Skye.

Scotland, Ireland. Perennial. Summer.

Rootstock branched, producing numerous caespitose barren shoots round the base of the flowering-stem, which is 2 to 9 inches high, slender, unbranched up to the corymb. Anthodes $\frac{1}{4}$ inch

across, in the female plant twice as long as in the male, 3 to 7, collected into a corymbose head, of which the short branches bear only 1 or (more rarely) 2 anthodes. Florets pink. Corolla of the female flower with a very oblique limb. Achenes oblong-fusiform, papillose. Pappus of the fertile florets of slender hairs; pappus of the slender abortive ovaries of the male plant of very numerous clavate compressed hairs with thick denticulations.

Mountain Everlasting.

French, *Gnaphale Pied de Chat*. German, *Zweihäusiges Ruhrkraut*.

The flowers sold so much in France under the name of Immortelles are a species of this genus, and resemble our native ones, which form a substitute for the brighter kinds. Wreaths, chaplets, and innumerable devices are formed out of these flowers, to decorate the graves of departed friends, in France. In the neighbourhood of Père la Chaise, the great Parisian cemetery, numbers of families are constantly employed in the manufacture of these memorials, and a large sale of them is constantly effected. Imperishable as the affection which dictates the adornment, these pretty flowers are supposed to be.

TRIBE IV.—SENECIONEÆ.

Leaves alternate. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect, those of the circumference generally female and ligulate. Anthers without basal appendages. Branches of the style slender, terminated by a pencil-like tuft. Achenes cylindrical, with longitudinal ridges. Pappus consisting of hairs, very rarely absent.

GENUS XVI.—SENECIO. *Linn.*

Anthodes heterogamous and radiant, rarely homogamous and discoid. Clinanth flattish or convex, pitted but without paleæ. Pericline cylindrical or campanulate, of a single row of equal herbaceous phyllaries, generally with a second irregular series of much shorter ones at the base, all at length reflexed. Florets of the disk tubular and perfect, generally surrounded by a ray of female ligulate florets. Branches of the style of the perfect flowers truncate, penicillate at the apex. Achenes cylindrical, not beaked, ribbed. Pappus of numerous rows of setaceous, nearly simple, more or less caducous hairs.

Annual or perennial herbs or under-shrubs, with alternate leaves, and corymbose (more rarely paniculate or solitary) anthodes. Florets generally yellow, more rarely orange or purple.

The name of this genus of plants is given in allusion to the hoary appearance of some of the species, and comes from *senex*, an old man.

SECTION I.—VULGARES. *Reich. fl.*

Annual, herbaceous. Stem weak or flexuous, lax-corymbosely branched at the apex. Leaves flaccid, pinnatifid. Outer phyllaries much shorter than the strapshaped inner ones. Ligulate florets of the ray none, or short and revolute.

SPECIES I.—*SENECIO VULGARIS*. *Linn.*

PLATE DCCXLIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. MCLIX. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 263.

Stem weak, juicy, fragile, sub-paniculately branched. Lower leaves oblanceolate or obovate, narrowed towards the base; upper ones oblong, semi-amplexicaul, with distinct auricles; all sinuate-pinnatifid, with the segments sub-equal, toothed. Corymbs separate, terminating the stem and branches. Anthodes slightly drooping. Pericline conico-cylindrical, glabrous or puberulent; outer phyllaries about one-fourth the length of the inner ones. Florets of the ray none, or short and revolute. Achenes hispid on the ribs. Plant glabrous, or hairy with the hairs articulated but not gland-tipped.

Var. α , *genuinus*.

Heads discoid.

Var. β , *radiatus*.

Heads with a ray of short revolute ligulate florets.

In cultivated and waste ground, &c. Very common, and generally distributed. Var. β I have seen only in the Channel Islands.

England, Scotland, Ireland. Annual. All the year.

Stem 6 to 18 inches high, irregularly branched, striated, succulent towards the apex. Leaves very variable in the depth of incision. Corymbs few-flowered, paniculately arranged. Anthodes $\frac{1}{2}$ inch long, at first subsessile, at length long-stalked. Outer phyllaries tipped with black. Florets yellow; the ray, when present, very short. Plant sometimes glabrous, sometimes more or less thickly clothed with woolly white hairs which are not tipped with glands.

Common Groundsel.

French, *Senecion Commun.* German, *Kreuz-Kraut.*

This is one of the most troublesome weeds in our gardens, on account of its little feathery fruits, which blow about and vegetate wherever they fall. It is, however, so favourite a salad with our little cage-birds, that we never see it without thinking of their pleasant songs, and are perhaps tempted to be indulgent to it accordingly. It should, however, be carefully weeded from every well-kept garden. Infused in water, it is said to make a pleasant wash for the skin, from its property of softening the water. The bruised leaves are affirmed to be a good application to boils. A poultice of the leaves applied to the pit of the stomach is said to cause vomiting, and an infusion taken internally produces the same effect.

SPECIES II.—**SENECIO SYLVATICUS.** *Linn.*

PLATES DCCL. DCCLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLX. Figs. 2, 3.

Billot, Fl. Gall. et Germ. Exsicc. No. 578.

Stem rather weak and fragile, corymbosely branched, with the branches ascending. Lower leaves oblanceolate or obovate, narrowed towards the base; upper ones oblong, sessile, or semi-amplexicaul; all deeply and interruptedly sinuate-pinnatifid, with the segments unequal and the largest ones toothed or cut. Corymbs combined in a large irregular terminal flat-topped compound corymb. Anthodes erect. Pericline cylindrico-conical, glandular-puberulent; outer phyllaries less than one-fourth the length of the inner. Florets of the ray very short, revolute. Achenes pubescent on the ribs. Plant puberulent, or pubescent with gland-tipped hairs.

On banks and dry pastures, and heaths, waste places, and open woods. Rather common, and generally distributed.

Var. *α, genuinus.*

PLATE DCCL

S. sylvaticus, Sm. Eng. Bot. No. 748.

Upper leaves not auriculate.

Var. *β, auriculatus.* *W. Meyer.*

PLATE DCCLI.

S. lividus, Sm. Eng. Bot. No. 2515 (non Linn.).

Upper leaves semi-amplexicaul, with distinct auricles.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Very like the common groundsel, but yellower green, viscid-glandular and odorous; the stem tougher and less juicy; the

leaves with the interval between the lobes toothed; the lower branches elongated so as at length to bring their corymbs of anthodes up to the level of the one that terminates the main stem. Anthodes larger, $\frac{3}{4}$ inch long, tapering much towards the apex. Florets of the ray always present, rather pale-yellow. Achenes roughened on the ribs, dark-grey, with longer and more silky hairs than in *S. vulgaris*.

The variety β , which scarcely deserves to be raised even to that rank, grows with the typical form.

Mountain Groundsel.

French, *Senecion des Bois*. German, *Wald Baldgreis*.

SPECIES III.—**SENECIO VISCOSUS.** *Linn.*

PLATE DCCLII.

Billot, Fl. Gall. et Germ. Exsicc. No. 577.

Stem stiff, tough, rough, almost woody at the base, irregularly corymbosely branched, with the branches ascending-spreading. Lower leaves obovate, narrowed towards the base; upper ones oblong, sessile, scarcely amplexicaul; all deeply sinuate-pinnatifid, with the segments nearly equal and toothed or pinnatifid. Corymbs combined into a large very irregular terminal round-topped corymb. Anthodes erect. Pericline ovoid-conical, densely glandular-pubescent; outer phyllaries half the length of the inner. Florets of the ray short, revolute. Achenes entirely glabrous. Plant thickly pubescent with gland-tipped hairs.

On waste places, ground which has been recently disturbed, and sandy seashores. Local, but widely distributed, extending from Kent to Aberdeen on the east, and Glamorgan to Dumbarton on the west, of the island.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Plant 6 to 18 inches high, with the stems solitary or several from the crown of the root, each at first paniculately branched, but the lateral branches at length growing out till the whole forms a round-topped bush. Leaves broader than in the preceding species, and with the incisions between the segments deeper than in *S. vulgaris*, and the segments more cut than in *S. sylvaticus*. Anthodes $\frac{1}{2}$ inch long. Florets yellow. Achenes without hairs, yellowish. Whole plant dark-green, foetid.

Stinking Groundsel.

French, *Senecion Visqueux*. German, *Klebriger Baldgreis*.

SECTION II.—VERNALES. *Reich. fil.*

Annual or sub-perennial. Stem weak or flexuous, lax-corymbosely branched at the apex. Leaves flaccid, pinnatifid or repand. Outer phyllaries much shorter than the strapshaped inner ones, or absent. Ligulate florets of the ray numerous, elongate, flat and spreading, at length reflexed.

SPECIES IV.—**SENECIO SQUALIDUS.** *Lin.*

PLATE DCCLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXI. Fig. 1.

S. chrysanthemifolius, Poir. D. C. Prod. Vol. VI. p. 345.

Annual. Stem stiff, tough, flexuous, almost woody at the base, slightly branched, with the branches ascending. Lower leaves narrowed at the base; upper ones semi-amplexicaul, auricled; all flaccid, very deeply, evenly, and rather remotely pinnatifid, with the lobes oblong-strapshaped, entire or toothed on the outer side. Corymbs simple, solitary or more rarely two or three combined into a compound corymb. Anthodes erect. Pericline oblong-ovoid, glabrous; outer phyllaries few, one-third the length of the inner. Florets of the ray elongate, broad-spreading. Achenes hispid-pubescent on the ribs. Plant glabrous or subglabrous, not glandular.

Naturalized on old walls and in waste ground at Bideford, Devon; Oxford; Allesley church, Warwickshire.

[England.] Annual or Biennial. Summer and Autumn.

Stem 8 to 12 inches high, decumbent and very hard at the base, rather slender, erect. Lower leaves less divided than the upper ones, and narrowed into a winged petiole dilated at the base. Anthodes $\frac{3}{4}$ inch across the ray, few, in a lax terminal corymb, with small bracts on the peduncles beneath them. Florets bright-yellow; those of the ray 8 to 14, 2- or 3-nerved, entire. Achenes cylindrical, greyish-brown, with white hairs. Plant glabrous, or with articulate hairs, not gland-tipped on the stem and young leaves; scent resembling that of mugwort.

Inelegant Ragwort.

French, *Senegon à Feuilles de Leucanthème.*

SECTION III.—JACOBÆÆ. *Reich.*

Perennial or biennial. Stem rigid, erect, fastigiato-corymbosely branched at the apex. Leaves firm, pinnatifid or lyrate-pinnatifid. Outer phyllaries much shorter than the inner ones, lanceolate-acuminate. Ligulate florets of the ray numerous, elongate, flat and spreading, at length reflexed, very rarely absent.

SPECIES V.—**SENECIO ERUCIFOLIUS.** *Lin.*

PLATE DCCLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXVI.

Billot. Fl. Gall. et Germ. Exsicc. No. 141.

S. tenuifolius, *Jacq.* Sm. Eng. Bot. No. 574. *Hook. & Arn.* Brit. Fl. ed. viii. p. 253.

Perennial. Rootstock somewhat woody, very shortly creeping. Stem stiff, straight, sparingly cottony, corymbosely branched at the apex, with the branches erect. Radical leaves oblanceolate or obovate, crenately lobed; lower stem-leaves stalked; upper ones amplexicaul, embracing the stem with palmately-cut auricles; all firm, flattish, puberulent, pale beneath, more or less deeply pinnatifid, with the lobes parallel, oblong or strapshaped, toothed or entire. Corymbs mostly combined into an irregular terminal flat-topped compound corymb. Anthodes erect. Pericline oblong-hemispherical, puberulent, especially at the base; outer phyllaries half the length of the inner. Achenes all hispid on the ribs. Plant pubescent.

Roadsides, ditch-banks, and borders of fields. Not uncommon, especially on calcareous soils, but not confined to them. Rare in Scotland, where it appears only to occur in the county of Berwick.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Stems growing in tufts, 18 inches to 4 feet high. Leaves very variable in the degree of their incision, the lower ones less deeply divided than the upper. Corymbs of the lower branches distinct from the main terminal compound corymb. Anthodes $\frac{5}{8}$ to $\frac{3}{4}$ inch across, on peduncles with small bracts resembling the outer phyllaries. Florets bright-yellow, the ligulate ones numerous, mostly 4-nerved. Achenes oblong-cylindrical, very pale-brown; pappus yellowish-white. Plant varying much in the degree of pubescence, which is sometimes of short, sometimes of elongate curled hairs.

Hoary Ragwort.

French, *Senecion à Feuilles de Ragotte.* German, *Reichenblattiger Baldgais.*

SPECIES VI.—*SENECIO JACOBÆA*. Linn.

PLATE DCCLV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXIV. Fig. 2.
Billot, Fl. Gall. et Germ. Exsic. No. 46.

Perennial. Rootstock rather fleshy, slightly oblique, not creeping. Stem stiff, straight, corymbosely branched towards the apex, with the branches erect. Radical leaves obovate, pinnatifid or lyrate-pinnatifid; lower stem-leaves stalked, upper ones semi-amplexicaul, embracing the stem with palmately-cut auricles; all firm, much undulated, glabrous or sub-glabrous, bi-pinnatifid, with the primary segments pinnatifid, the secondary ones toothed. Corymbs combined into a large terminal compound flat-topped dense corymb. Anthodes erect. Pericline cylindrical-hemispherical, sub-glabrous; outer phyllaries few, not one-fourth the length of the inner, subulate. Achenes of the circumference glabrous, those of the disk hirsute. Plant glabrous or sub-glabrous, or more rarely arachnoid-hairy on the stem, midrib of leaves, and base of phyllaries.

In pastures, borders of fields, waste places, &c. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Stem solitary or 2 or 3 together, 18 inches to 4 feet high, much branched towards the tip in large examples. Radical leaves variable in the relative size of the terminal lobe to the lateral segments, which become smaller towards the base of the petiole; stem-leaves always much divided, and undulated somewhat like those of curled parsley. Anthodes very numerous, $\frac{3}{4}$ to 1 inch across the ray. Peduncles with bracts. Pericline as broad as long, generally glabrous. Florets bright-yellow, those of the ray rather narrow, numerous, mostly 4-nerved, rarely absent. Achenes oblong-cylindrical, those of the ray destitute of the hairs which are so common in this genus, and which are present on those of the disk. Plant generally glabrous, deep-green.

Mr. J. Waddy finds near Churchtown, co. Wexford, a form with the anthodes destitute of ray-florets, and has favoured me with recent specimens. It has been also observed by Mr. H. C. Watson in Sutherland.

Common Ragwort.

French, *Seneçon Jacobée*. German, *Jacobs Baldreis*.

All who walk along country lanes or roadsides in July and August must often have seen this common plant, with its heads of bright golden-yellow flowers, and

ragged glossy green leaves. Gerarde tells us that in his day the country people called it "St. James his wort," also Staggerwort and Ragweed. It was formerly used medicinally for many disorders, but does not seem to possess any valuable properties. The leaves yield a good red dye; and if the flowers be gathered open, and used fresh, they will dye wool of a pale green, but the colour is apt to fade. If woollen cloth be boiled in alum-water, and afterwards in a decoction of the flowers, it takes a beautiful deep yellow.

SPECIES VII.—*SENECIO AQUATICUS*. *Huds.*

PLATE DCCLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 142.

Biennial. Rootstock fleshy, short, almost vertical, not creeping. Stem stiff, straight, corymbosely branched at the apex, with the branches spreading-ascending. Radical leaves oval, undivided or lyrate-pinnatifid, with the lateral lobes small; lower stem-leaves stalked, lyrate-pinnatifid; upper ones semi-amplexicaul, embracing the stem with short palmately-cut auricles, more or less deeply pinnatifid; with the segments toothed or inciso-serrate; all firm, slightly undulated, glabrous or sub-glabrous. Corymbs separate or combined into a compound irregular lax corymb. Anthodes erect. Pericline cylindrical-hemispherical, sub-glabrous; outer phyllaries very few, about one-third the length of the inner ones, subulate. Achenes all glabrous. Plant sub-glabrous or slightly arachnoid-hairy.

Var. *α*, *genuinus*. Gr. & Godr.

S. aquaticus, *Reich. Fl. Excurs. p. 244.*

Radical leaves oval or ovate-oval, without lateral lobes, or with small inconspicuous ones; leaves up to the middle of the stem lyrate-pinnate.

Var. *β*, *pinnatifidus*. Gr. & Godr.

S. barbaereifolius, *Reich. Fl. Excurs. p. 244 (non Krock).*

Radical and lower stem-leaves lyrate, with conspicuous lateral lobes. Leaves in the middle of the stem deeply pinnatifid or pinnatifid.

In wet meadows and pastures, sides of streams, ponds, and ditches, &c. Common, and generally distributed.

England, Scotland, Ireland. Biennial or Perennial?
Autumn.

Stem 1 to 3 feet high, branched from about the middle, with the branches more spreading and longer in proportion than in *S. Jacobæa*; the leaves less deeply divided, less undulated, and the lower one with a much larger terminal lobe. Anthodes fewer, in a much more lax and irregular corymb, larger, 1 to $1\frac{1}{2}$ inch across; but the most striking difference between the two species is that the achenes are glabrous, or sometimes with a very few hairs between the shallow ridges in *S. aquaticus*, even in the disk-florets, while in *S. Jacobæa* the latter are hairy. Leaves generally purple below.

A form between the extremes of vars. α and β is the most common.

Marsh Ragwort.

French, *Senecion de l'Eau*. German, *Wasser Baldgreis*.

SECTION IV.—DORIÆ. *Reich.*

Perennial. Stem rigid, erect, fastigiato-corymbosely branched at the apex. Leaves firm, elliptical or oval, undivided, toothed. Outer phyllaries much shorter than the inner ones. Ligulate florets of the ray few, elongate, flat and spreading, at length reflexed.

SPECIES VIII.—*SENECIO SARACENICUS*. *Linn.*

PLATE DCCLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1014.

S. salicetorum, Godr. Fl. de Lorr. Vol. II. p. 11. *Gr. & Godr. Fl. de Fr.* Vol. II. p. 120.

Rootstock creeping, with elongated stolons. Stem erect, glabrous, simple, except at the extreme apex, where it is corymbosely branched. Leaves firm, sessile, elliptical or oblong-elliptical, sub-semi-amplexicaul; lowest ones oblanceolate-elliptical, sub-petiolate; all finely and irregularly serrate with incurved teeth, glabrous or nearly so on both sides. Corymbs solitary, or several combined into a rather irregular compound corymb. Anthodes numerous, erect. Pericline cylindric-hemispherical, puberulent; outer phyllaries 4 to 6, two-thirds the length of the inner, linear. Ray-florets 6 to 8. Achenes glabrous.

By the sides of streams. Local. It occurs in Somerset, Wilts, Stafford, Denbigh, Cheshire, Derby, York, Lancashire, Westmoreland, Cumberland, and Northumberland; and in most of the Scotch

counties, as far North as the Forth and Clyde, and northward to Aberdeen, but most probably introduced.

England, [Scotland,] Ireland. Perennial. Autumn.

Rootstock emitting long subterranean white or pink stolons. Stem 3 to 5 feet high, very leafy. Lower leaves 3 to 8 inches long by $\frac{3}{4}$ to 2 inches broad, attenuated at the base, but scarcely stalked; those towards the middle of the stem slightly amplexicaul but without distinct auricles, finely serrate, with small cartilaginous teeth slightly incurved. Pericline $\frac{1}{4}$ inch long. Anthodes $\frac{3}{4}$ inch broad. Florets bright-yellow. Plant nearly glabrous.

Broad-leaved Ragwort.

French, *Senecion Sarrasin*. German, *Saracenischer Baldgreis*.

SPECIES IX.—**SENECIO PALUDOSUS.** *Linn.*

PLATE DCCLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXIV. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 399.

Rootstock very shortly creeping. Stem erect, arachnoid-pubescent, simple, except at the extreme apex, where it is corymbosely branched. Leaves sessile, scarcely amplexicaul, strap-shaped-elliptical, attenuated at both ends; lowest ones strap-shaped-oblongate, sub-petiolate; all very sharply serrate, more or less arachnoid-hoary beneath. Corymbs simple and solitary, or several combined into a rather irregular compound corymb. Anthodes rather few, erect. Pericline cylindric-hemispherical, glabrous or arachnoid-pubescent; outer phyllaries numerous, one-third the length of the inner, linear. Ray-florets 10 to 16. Achenes all glabrous.

Fen ditches. Now very rare and nearly extinct. In Wicken Fen, and three miles below Ely, Cambridgeshire, and in the counties of Norfolk, Suffolk, and Lincoln.

England. Perennial. Late Summer and Autumn.

Stem 4 to 6 feet high. Leaves 3 to 5 inches long by $\frac{1}{2}$ to $\frac{3}{4}$ inch broad, with the teeth very long and slender, directed towards the apex of the leaf; middle leaves very slightly amplexicaul, without distinct auricles. Anthodes $1\frac{1}{2}$ inch across. Florets bright-yellow. Plant variable in the degree of pubescence on the stem and under side of the leaves. Pericline arachnoid at the base.

Of this species I have seen no British specimens.

Great Fen Ragwort.

French, *Senecion des Marais*. German, *Sumpf Baldgreis*.

SECTION V.—CINERARIA. *Linn.*

Perennial or biennial. Stem rigid, erect, corymbosely or umbellato-corymbosely branched at the apex. Leaves firm, various. Phyllaries all equal. Ligulate florets of the ray numerous or few, elongate, flat and spreading, at length reflexed.

SPECIES X.—**SENECIO PALUSTRIS.** *D. C.*

PLATE DCCLIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXXII. Fig. 2.

Cineraria palustris, Linn. Sm. Eng. Bot. No. 151.

Biennial. Stem erect, simple, except at the very apex, woolly with jointed hairs. Lowest leaves strapshaped, attenuated at the base, sub-petiolate; upper leaves sessile, slightly amplexicaul, lanceolate; all remotely dentate or sinuate-dentate, or more rarely entire, often undulated, sparingly woolly with glandular jointed hairs. Corymbs united into a compact rather irregular compound corymb. Anthodes rather few, erect. Pericline hemispherical-bellshaped; phyllaries all equal, sparingly woolly with glandular jointed hairs. Ray-florets very numerous. Achenes glabrous. Pappus at length much longer than the florets.

Fen ditches. Very rare, and now nearly extinct. It occurred in the counties of Suffolk, Norfolk, Cambridge, Hunts, and Lincoln. The only place where it has been observed for many years appears to be in West Fen, Ely.

England. Biennial. Summer.

Stem 1 to 3 feet high, very thick. Leaves crowded quite up to the anthodes, which are about 1 inch across. Pericline yellowish. Florets lemon-yellow. Pappus at first as long as the florets, but increasing in length afterwards until it much exceeds them. Plant pale yellowish-green, sparingly clothed with jointed glandular but not gland-tipped hairs.

Of this I have not seen British specimens.

Marsh Fleawort.

SPECIES XI.—**SENECIO CAMPESTRIS.** *D. C.*

PLATE DCCLX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXVIII. Fig. 2.

Cineraria campestris, Retz. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 424.

C. integrifolia, With. Sm. Eng. Bot. No. 152.

Biennial? Stem erect, simple, hoary-arachnoid. Radical leaves in a rosette, oval or elliptical, spathulate; stem-leaves few, sessile, semi-amplexicaul, lanceolate or strapshaped. Leaves all entire, or the radical ones toothed, densely pubescent on both sides, and arachnoid-floccose when young. Corymb simple, umbellate. Anthodes 2 to 6, erect. Pericline hemispherical, bell-shaped; phyllaries all equal, arachnoid-hairy at the base, puberulent towards the apex. Ray-florets rather numerous. Achenes hispid. Pappus at length a little longer than the florets.

Var. α , *genuina*.

Radical leaves entire or slightly toothed. Stem 3 inches to 1 foot high.

Var. β , *maritima*.

Radical leaves generally with numerous broad teeth. Stem 1 foot high. Anthodes more numerous and larger than in var. α .

In chalky pastures and by roadsides. Rare. In Dorset, Hants, Sussex, Surrey, Berks, Oxford, Hertford, Essex, Cambridge, and Northampton. Var. β on maritime rocks near Holyhead, Anglesea.

England. Biennial or Perennial? Early Summer.

Radical leaves lying flat on the ground in a rosette, 1 to 2 inches long; stem-leaves few, especially on the upper part of the stem. Peduncles short. Anthodes $\frac{3}{4}$ to 1 inch across, bright-yellow. Pappus nearly as long as the florets, not increasing much afterwards. Whole plant more or less hoary with arachnoid wool, which at length nearly disappears from the upper side of the leaves, leaving them covered with short curled hairs.

Of var. β I have seen no specimens.

Field Fleawort.

French, *Senecion des Prés*. German, *Feld Baldgrais*.

GENUS XVII.—DORONICUM. *Linn.*

Anthodes heterogamous and radiant. Clinanth hemispherical, naked or hairy. Pericline saucer-shaped, of nearly equal herbaceous phyllaries, imbricated in 2 or 3 rows. Florets of the disk tubular, perfect; those of the circumference female, ligulate. Branches of the style of the perfect flowers truncate, slightly downy at the apex. Achenes of the disk with a pappus of hairs arranged in several rows, those of the circumference without pappus.

Perennial herbs, with fleshy rhizomes with tuberous enlargements. Stem-leaves alternate, mostly amplexicaul. Anthodes large, solitary or corymbose. Florets yellow.

The name of this genus of plants appears to have been derived from *Doronigi*, an Arabian name meaning excellent, surpassing ; or, as some imagine, from δῶρον (*doron*) a gift, and νίκη (*nikè*), victory, from its power of destroying.

SPECIES I.—**DORONICUM PARDALIANCHES.** *Linn.*

PLATE DCCLXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLV. Fig. 2.

Billot, Fl. Gall. et Germ. Exsicc. No. 2279.

Rootstock extensively creeping. Stem erect, rather thinly woolly, corymbosely branched at the apex. Radical leaves on long stalks, roundish-ovate, deeply cordate ; lowest stem-leaves stalked, with the petiole much dilated, and amplexicaul at the base ; middle stem-leaves panduriform, amplexicaul ; uppermost ones ovate, amplexicaul ; all repand-dentate, finely pubescent. Anthodes generally several. Phyllaries triangular-subulate, a little shorter than the ray-florets. Achenes of the ray-florets glabrous or nearly so, those of the disk pubescent. Clinanth pubescent.

In open woods, meadows, and by the sides of streams. Rare, and not native, though occurring in many of the counties both of Scotland and England.

England, Scotland. Perennial. Summer.

Rootstock emitting numerous thick brittle stolons, which become enlarged at the apices, from whence spring tufts of leaves, and afterwards flowering-stems 1 to 3 feet high, clothed with rather stiff jointed spreading hairs. Radical leaves 3 to 5 inches broad, and a little longer, on petioles exceeding the lamina ; lowest stem-leaves similar ; the succeeding ones smaller, less cordate, with shorter petioles much dilated at the base ; leaves in the middle of the stem oblong, constricted above the much-dilated base, and then enlarged ; uppermost leaves not constricted, acute. Anthodes $1\frac{1}{2}$ inch across. Pericline saucer-shaped ; phyllaries with gland-tipped hairs. Florets bright-yellow. Achenes nearly black, ribbed, those of the disk hirsute, with long white pappus, those of the ray glabrous, without pappus. Clinanth finely downy. Plant green, rather soft.

Great Leopard's-bane.

French, *Doronie à Feuilles en Cœur.* German, *Gemeine Gernswurz.*

This plant is an old inhabitant of English gardens, and is now considered to be naturalized. It possesses powerful effects ; and Dr. Withering tells us that Matthi-

olus records an instance of a dog being killed by it; and there is, he says, "some reason to believe that the mortal career of the celebrated Conrad Gesner, the German Pliny, or, as Boerhaave styles him, that '*Monstrum Eruditionis*,' was prematurely closed by experimenting with this fatal herb."

SPECIES II.—*DORONICUM PLANTAGINEUM*. *Linn.*

PLATE DCCLXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLVI. Fig. 2.

Rootstock shortly creeping. Stem erect, puberulent below, pubescent, with gland-tipped hairs at the summit, simple, or with a single branch. Radical leaves on long petioles, ovate, gradually attenuated into the petioles; lowest stem-leaves with winged petioles, slightly dilated, and amplexicaul at the base; middle stem-leaves panduriform, amplexicaul; uppermost ones elliptical or lanceolate, sessile, slightly decurrent; all acute, repand-dentate. Anthode commonly solitary. Phyllaries subulate, a little shorter than the ray-florets. Achenes of the ray-florets glabrous, those of the disk pubescent. Clinanth glabrous.

In open woods, meadows, and by roadsides. Rare, and not native, occurring in several of the English counties. In Scotland more plentiful than *D. Pardalianches*.

[England, Scotland.] Perennial. Early Summer.

This plant bears much resemblance to *D. Pardalianches*, but is more slender and more glabrous, $1\frac{1}{2}$ to 3 feet high. Stem generally simple and 1-headed; the anthodes considerably larger, 2 to $2\frac{1}{2}$ inches across; phyllaries narrower and more hairy, distinctly ciliated; the stolons are thicker and shorter, more woolly at each scale; the leaves with much fewer and shorter hairs, sometimes quite glabrous.

The original plate, in "English Botany," No. 630, under the name of "*D. Pardalianches*," represents *D. plantagineum* with a root-leaf of the true *D. Pardalianches* added to it.

Plantain-leaved Leopard's-bane.

French, *Doronie à Feuilles de Plantain.*

TRIBE V.—*HELIANTHÆ*.

Leaves generally opposite or verticillate. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect, those of the circumference generally female or neuter and ligulate. Anthers without basal appendages, generally blackish. Branches

of the style in the fertile flowers linear, convex externally, flat internally, hairy or tufted at the apex. Achenes generally compressed or prismatic. Pappus none, or crown-like or of awns.

GENUS XVIII.—*BIDENS*. Linn.

Anthodes heterogamous and radiant, or homogamous and discoid, many-flowered. Pericline hemispherical or campanulate, of 2 rows of phyllaries, the exterior ones herbaceous and foliaceous, generally reflexed, the interior row scarious. Clinanth slightly convex, pitted, furnished with scarious scales. Florets of the disk perfect, regular, with a tubular corolla; those of the ray in a single row, neuter, with a ligulate corolla, frequently absent. Achenes generally compressed, with 1 or 5 awns at the apex, which are the only representatives of the hairs of the pappus.

Annual or perennial herbs with opposite leaves, and generally with terminal and axillary anthodes of yellow florets.

The name of this genus of plants comes from the words *bis*, double, and *dens*, a tooth, in allusion to the awns of the seeds.

SPECIES I.—*BIDENS CERNUA*. Linn.

PLATE DCCLXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLI. Fig. 2.

Billot. Fl. Gall. et Germ. Exsicc. No. 2087.

Stem slightly hairy. Leaves glabrous, strapshaped-elliptical, coarsely serrate; those near the middle of the stem sessile and sub-connate at the base. Anthodes drooping, solitary at the extremity of the stem and branches. Pericline broader than long; outer phyllaries foliaceous, unequal, reflexed or spreading, longer than the inner ones, rough at the edges; inner phyllaries broadly oval, scarious, about as long as the florets. Achenes much compressed, enlarged upwards, sessile, with 4 ribs, all (rarely only 3) of which terminate in awns, which, as well as the ribs, are armed with reflexed prickles.

Var. *α*, *discoidea*.

Anthodes discoid.

Var. *β*, *radiata*.

Coreopsis Bidens, Linn. Sp. Plant. p. 1281.

Anthodes radiant, with ligulate neuter florets round the circumference.

In wet places, margins of ponds and ditches. Common in England, rare in Scotland, where it occurs as far North as the counties of Moray, Kincardine, and Argyle. Var. β rare. I have seen it from Bungay, Suffolk; Richmond, Yorkshire; Portmore, co. Antrim.

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Stem erect, 3 inches to 2 feet high, simple in small examples (when it is *B. minima*, Linn.), paniculately branched in large specimens. Leaves very coarsely serrated or inciso-serrate, those in the middle of the stem with enlarged bases, which are united together across the stem, but so slightly as scarcely to deserve the name of connate. Anthodes hemispherical, $\frac{1}{2}$ to $\frac{3}{4}$ inch across, the outer phyllaries strapshaped or oblong-strapshaped, generally reflexed, one-half to twice as long as the inner phyllaries; inner phyllaries and paleæ yellow, striped with black, the latter oblanceolate, and slightly exceeding the florets. Achenes oblong, olive, with the ribs and awns paler, the latter generally 4 in number, but sometimes only 3; lateral ribs stronger than those on the back and face. Plant nearly glabrous, except the stem.

Nodding Bur-Marygold.

French, *Bident Penché*. German, *Nickender Wasser-dost*.

SPECIES II.—*BIDENS TRIPARTITA*. Linn.

PLATE DCCLXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXLI. Fig. 1.

Billot, Fl. Gall. et Germ. Exsicc. No. 2866.

Stem nearly glabrous. Leaves glabrous, lanceolate, coarsely serrate, generally with 2 large lanceolate lobes at the base, so as to be tripartite, and sometimes with the terminal portion also deeply 3-cleft; those in the middle of the stem stalked, with the bases of the petioles united by a transverse line. Anthodes erect or sub-erect, solitary at the extremity of the stem and branches. Pericline longer than broad; outer phyllaries unequal, foliaceous, erect with recurved points, longer than the inner ones, ciliated at the margins; inner phyllaries oblong-ovate, scarious, nearly as long as the florets. Achenes much compressed, enlarged upwards, sessile, with 4 ribs, 2 (or more rarely 3) of which terminate in awns, which, as well as the ribs, are armed with reflexed prickles.

In wet places, margins of ponds and ditches. Common in

England, rare in Scotland, where it occurs as far North as Clackmannanshire (Kirkmoran dam, near Alloa), Arran, and Islay

England, Scotland, Ireland. Annual. Late Summer and Autumn.

Very similar to *B. cernua*, but with the stem more wiry, the leaves broader, generally tripartite, all except the uppermost narrowed into a winged petiole at the base. Anthodes rather smaller, erect in flower, sub-erect in fruit. Pericline more bell-shaped and not nearly so broad; outer phyllaries longer in proportion, and adpressed at the base. Achenes rather larger, with the ribs concolorous, less strongly marked than in the preceding species; the awns rather shorter in proportion, with stouter bristly spines. Plant darker green.

Tripartite Bur-Marygold.

French, *Bident Tréfolié*. German, *Dreitheiliger Wasser-dost*.

This plant is sometimes employed on the Continent as a yellow dye, but the colour yielded is very indifferent.

TRIBE VI.—HELENIEÆ.

Leaves generally alternate, more rarely opposite. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect, rarely male; those of the circumference generally ligulate, female, or neuter. Anthers with the lobes acute at the base, but scarcely produced into tails. Branches of the style in the fertile flowers convex externally, flat internally, hairy or tufted at the apex. Pappus of several or numerous distinct scarious paleæ, rarely absent.

GENUS XIX.—GALINSOGA. *Ruiz et Pav.*

Anthodes heterogamous and radiant, several-flowered. Clinanth conical, with scarious paleæ. Pericline of 4 or 5 sub-herbaceous ovate phyllaries. Florets of the disk perfect, tubular, regular; those of the ray 4 or 5 in a single row, female, ligulate. Achenes prismatic, crowned by a pappus of oblong ciliated scales.

Annual herbs, with opposite 3-ribbed leaves, and small anthodes in dichotomous corymbose cymes. Florets of the disk yellow, those of the ray white.

SPECIES I.—*GALINSOGA PARVIFLORA*. Cav.

PLATE DCCLXV.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMLXXXIII. Fig. 1.**Billot, Fl. Gall. et Germ. Exsicc. Nos. 388 and 1900.*

Nearly glabrous. Leaves ovate, stalked, bluntly serrate. Clinanth conical. Pappus of 8 to 16 ciliated scales.

In cultivated ground. Plentiful in the neighbourhood of Kew. Believed to have originated from seeds contained in rubbish from Kew Gardens, which had been carried away and cast on the neighbouring fields. It not only maintains its ground, however, but also extends its area every year. A native of South America.

[England.] Annual. Autumn.

Stem 1 to 2 feet high, with opposite branches, sparingly hairy. Leaves opposite, shortly stalked, 3-nerved, acute or slightly acuminate, with remote scattered hairs on both sides, and ciliated margins. Anthodes in regularly-dichotomous cymes, $\frac{1}{2}$ to $\frac{1}{4}$ inch across, on slender leafless glandular-pubescent peduncles. Pericline hemispherical, of unequal scarious greenish phyllaries finely ciliated at the margins. Florets of the disk about as long as the phyllaries, yellow; those of the ray few, broadly ligulate, longer than the phyllaries, white. Achenes black, broader upwards, compressed, striate, terminated by a pappus of white scarious fimbriated scales about as long as the florets, and a little shorter than the achene. Plant green.

Small-flowered Galinsoga.

German, *Kleinblumige Galinsoge*.

This is a Peruvian plant, cultivated in this country since 1796, as an ornamental annual, though not possessed of much merit. For a long time it has been naturalized in the asparagus-grounds near Kew, Richmond, and Sheen.

TRIBE VII.—INULÆ.

Leaves alternate. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect; those of the circumference generally female and ligulate. Anthers with the lobes produced into tails at the base. Style of the perfect flowers with the branches compressed, flat above, rounded but not tufted at the apex, with the stigmatic lines marginal, conspicuous. Achenes generally cylindrical or tetragonal, with or without ridges. Pappus of plumose hairs, rarely crown-like.

GENUS XX.—*INULA*. *Linn.*

Anthodes generally heterogamous and radiant, many-flowered. Pericline hemispherical or campanulate, consisting of numerous rows of imbricated herbaceous phyllaries, the outermost ones sometimes foliaceous. Clinanth flat, naked, slightly pitted. Florets of the disk perfect, regular, with a tubular corolla; those of the ray generally in 1 row, female, ligulate, rarely tubular with a ligulate limb so short as not to exceed the phyllaries. Antherlobes produced downwards into filiform appendages. Achenes sub-cylindrical or prismatic. Pappus of hairs in 1 row, or in 2 rows, with the outer one of very short hairs or cleft scales.

Perennial or annual herbs, with alternate leaves; and moderately-sized or large solitary, corymbose or paniculate anthodes, with the florets both of the disk and the ray yellow.

The name of this genus of plants is said to be a corruption from Helen, as being fabled to have sprung from her tears.

SUB-GENUS I.—*CORVISARTIA*. *Mérot.*

Achenes 4-sided-prismatic, finely striate all round, truncate at the apex. Pappus of a single row of shortly-ciliated hairs.

SPECIES I.—*INULA HELENIUM*. *Linn.*

PLATE DCCLXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXI.

Corvisartia Helenium, Mérot. Gr. & Godr. Fl. de Fr. Vol. II. p. 173. *Reich. fl. l. c.* p. 12.

Stem corymbosely branched at the top, hairy. Radical leaves stalked, elliptical; stem-leaves (except the lowest) sessile, those in the middle of the stem ovate, amplexicaul; all finely and irregularly dentate-serrate, sub-glabrous above, greyish-velvety beneath. Anthodes few, very large, sub-solitary at the extremity of the stem and branches. Pericline hemispherical; outer phyllaries obovate-rhomboidal, foliaceous, lax, with spreading tips; inner ones oblanceolate-strapshaped, coriaceous, pubescent on the back and ciliated. Florets of the ray numerous, with the ligule spreading, much longer than the phyllaries and pappus, flat, toothed at

the apex. Achenes irregularly 4-sided, striated. Pappus of a single row of hairs.

In moist meadows, pastures, bushy places, and hedge-banks. Rare, and probably not native in many of its localities. It occurs in most of the Southern counties; and Mr. Baker considers it truly wild in Yorkshire, and it may possibly be so in Durham and the Lake district. In Scotland, however, it is certainly introduced.

England, [Scotland,] Ireland. Perennial. Late Summer and Autumn.

Rootstock enlarged, fleshy, many-headed. Stem stout, erect, deeply furrowed, 2 to 5 feet high. Radical and lower stem-leaves very large, not unlike those of a Mullein; those about the middle of the stem broader in proportion than the others, and amplexicaul. Anthodes solitary, or 2 or 3 in a corymb, on short peduncles. Pericline hemispherical, 1 to 2 inches across, the outer leaf-like phyllaries much developed in the larger anthodes. Florets all bright-yellow. Achenes glabrous, olive-brown, with 4 very strong ribs, which give it a prismatic shape; the spaces between the ribs finely striate. Pappus longer than the achene, dirty-white usually tinged with reddish-brown; hairs very shortly ciliated. Plant pale-green, the under side of the leaves and phyllaries softly pubescent.

Elecampane.

French, *Aunée Officinale*. German, *Achter Alaut*.

This plant has a reputation attached to it even independently of its mythical name. It was highly valued by the older physicians for its medicinal virtues, and is still employed to some extent as an aromatic tonic. A sweetmeat, very popular with schoolboys, is made from the root candied with sugar. In former days it was esteemed as a cordial by the monkish herbalists, who celebrated its virtues in the line "*Eucl campana reddit præcordia sana*." The name *Elecampane* is a corruption of the first of these words. Gerarde tells us "it is good for shortnesse of breath, and an old cough, and for such as cannot breathe unless they hold their neckes upright." Pliny affirms "that the same being chewed fasting doth fasten the teeth." Gerarde adds: "The root of *Elecampane* is with good successe mixed with counterpoisons; it is a remedy against the biting of serpents, it resisteth poison; it is good for them that are bursten and troubled with cramps and convulsions." Of the origin of the name of the plant our imaginative friend Gerarde says: "It tooke the name *Helenium* of *Helena*, wife to *Menelaus*, who had her hands full of it when *Paris* stole her away into *Phrygia*." We are told that the leaves were eaten by the Romans as a potherb: the practice may have extended to *Troy*, and account for the fact which Gerarde relates of the fair *Helen*. The root contains a large quantity of a principle called *inulin*, resembling starch in properties; but this is combined with a resinous bitter substance and a volatile oil, to which the medical qualities of the plant are due. A decoction of the root is said by *Withering* to cure sheep affected with the scab.

SUB-GENUS II.—ENULA. *Dub.*

Achenes cylindrical, finely striate all round, truncate or slightly attenuated towards the apex. Pappus of a single row of shortly-ciliated hairs.

SPECIES II.—INULA CONYZA. *D. C.*

PLATE DCCLXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXIII.

Billot. Fl. Gall. et Germ. Exsicc. No. 2090.

Conyza squarrosa, *Linn.* *Sm.* Eng. Bot. No. 1195.

Stem corymbo-paniculately branched towards the top. Radical leaves stalked, oblanceolate; stem-leaves (except the lowest) subsessile, those in the middle of the stem lanceolate or lanceolate-elliptical, attenuated at the base; all faintly and irregularly dentate-serrate, pubescent on both sides. Anthodes very numerous, rather small, aggregated in small corymbs at the extremity of the stem and branches, which united form a compound corymb or corymbose-topped panicle. Pericline oblong-campanulate; phyllaries strapshaped, the outer ones a little broader, green, often purple at the margin, adpressed with spreading tips, pubescent on the back; inner ones sub-scarious and ciliated. Florets of the ray with the ligule very short, not exceeding the phyllaries or pappus, involute, toothed at the summit. Achenes glabrous with a few hairs near the top, cylindrical, striated. Pappus of hairs in a single row.

On dry banks and in bushy places and woods, especially on chalky soils. Rather common, extending as far North as Westmoreland and York.

England. Biennial. Autumn.

Stem erect, 1 to 4 feet high, striate, purple, branched in the upper half with long erect-ascending slender generally nearly leafless branches. Anthodes $\frac{1}{2}$ inch long, longer than broad, with the inner phyllaries generally purple. Florets yellow, scarcely exceeding the phyllaries. Achenes dark-brown, with rather strong striae. Pappus dirty-white. Plant green, rather softly pubescent. Lower leaves somewhat resembling those of the Foxglove.

Ploughman's Spikenard.

French, *Aunée Rude*. German, *Sparriger Alaut*.

SPECIES III.—*INULA SALICINA*. *Linn.*

PLATE DCCLXVIII.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXVIII. Figs. 1, 2.**Billot, Fl. Gall. et Germ. Exsicc. No. 1228.*

Stem glabrous or sub-glabrous, simple or sparingly corymbosely branched at the top. Lowest leaves oblanceolate, narrowed towards the base; upper leaves elliptical or lanceolate-elliptical, sessile, semi-amplexicaul with rounded auricles; all firm, with the veins prominent beneath, acute, very faintly and remotely denticulate, glabrous above, glabrous or with scattered hairs (especially on the veins) beneath, ciliated with cartilaginous hairs or processes. Anthodes solitary, large. Pericline globose-campanulate; phyllaries glabrous, with ciliated edges; the outer ones broader, foliaceous, with reflexed points; the inner ones strapshaped, sub-scarious. Florets of the ray with elongated ligules, toothed at the apex, much longer than the phyllaries and pappus. Achenes glabrous, cylindrical, striated. Pappus in a single row.

Along the wild rough shore of Lough Derg, co. Galway, from Portumna onwards, growing at intervals for about two miles, amongst tufts of *Schœnus nigricans*, *Molinia cœrulca*, *Galium boreale*, &c. (Dr. D. Moore, in Seemann's "Journal of Botany," Nov. 1865, p. 334).

Ireland. Perennial. Early Autumn.

Stem erect, 12 to 18 inches high. Leaves numerous, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, firm, sparingly hairy on the veins beneath in the Irish specimens. Anthodes bright-yellow, $1\frac{1}{2}$ inch across, in continental specimens. Pericline $\frac{1}{2}$ to $\frac{3}{4}$ inch across. Pappus dirty-white.

I have been favoured with specimens of this fine species from its discoverer, Dr. D. Moore, who has done so much for the botany of Ireland. The name of *I. semiamplexicaulis*, *Reuter*, has been suggested by some botanists; but the Galway plant agrees much better with *I. salicina*. I have seen specimens of the latter, from Denmark, Sweden, and Belgium, which have the leaves and stem quite as hairy as in the Irish plant, while in *I. semiamplexicaulis* the hairs are much more numerous, with bulbous bases, the leaves softer and more conspicuously serrate, the stem taller, and the anthodes more numerous.

The Irish specimens with anthodes are in fruit, but there is no appearance of ray-florets: so that either these have all fallen off, or the heads have been discoid.

Willow-leaved Inula.

SPECIES IV.—*INULA CRITHMOIDES*. Linn.

PLATE DCCLXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXXII. Fig. 1.*Billot.* Fl. Gall. et Germ. Exsicc. No. 1005.

Stem corymbosely branched at the apex, simple or paniculately branched in the upper half, glabrous. Leaves strapshaped or linear-strapshaped, entire, those on the main stem with a small tooth on each side near the apex; those of the branches and axillary fascicles generally without these teeth; all fleshy and glabrous. Anthodes rather few, in simple corymbs at the extremity of the stem and branches. Peduncles thickened upwards, with linear-strapshaped bracts passing insensibly into the phyllaries. Pericline funnelshaped-campanulate; phyllaries herbaceous, glabrous, adpressed; inner ones scarious at the margins. Florets of the ray numerous, their ligule linear, much longer than the phyllaries and pappus, flat, toothed at the apex. Achenes cylindrical, striated, pubescent. Pappus in a single row.

In salt marshes, and on rocks, banks and margins of ditches by the seaside. Rather rare, and confined to the South and West coasts, from Essex round to Wigton and Kirkecudbright.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock woody, many-headed. Stems 6 inches to 3 feet high, bare of leaves at the base by the time the flowers expand, densely leafy in the upper portion, with fascicles of small leaves on the axils of those leaves which have not axillary branches, dividing at the top into a few branches terminating in solitary peduncles, or more rarely with several branches dividing again at the apex; this, however, rarely happens, unless the central stem has been injured; but I have specimens from Sheppey with about a dozen branches terminated by corymbs or solitary flowers. Pericline $\frac{1}{2}$ inch across or more, broader than long. Florets bright-yellow. Pappus longer than the brownish achene, dirty-white. Plant yellowish-green, glabrous, fleshy.

Golden Samphire.

French, *Aunée Charnue.*

SUB-GENUS III.—*PULICARIA*. Gärtn.

Achenes cylindrical, rounded at the summit, with striae all round. Pappus double, the inner of elongated scarcely ciliated

hairs, the outer very short, crown-like, formed of scarious scales, denticulated or split into hairs at the apex.

SPECIES V.—*INULA DYSENTERICA*. *Linn.*

PLATE DCCLXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXXIII. Fig. 1.

Billot. Fl. Gall. et Germ. Exsicc. No. 387.

Pulicaria dysenterica, *Gärtn.* D. C. Prod. Vol. V. p. 479. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 395. *Fries*, Sum. Veg. Scand. p. 3. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 179. *Reich. fil.* l. c., p. 17. *Bab.* Man. Brit. Bot. p. 175. *Hook. & Arn.* Brit. Fl. ed. viii. p. 256.

Rootstock perennial, creeping, stoloniferous. Stem corymbosely branched at the apex, or slightly branched throughout, the lateral branches scarcely overtopping the main stem. Lower leaves oblong-oblongeolate, middle ones oblong-lanceolate, upper ones lanceolate; all amplexicaul, with large blunt auricles, undulated, entire or remotely serrate, thickly covered with very short soft hairs, particularly beneath. Peduncles not thickened upwards. Anthodes corymbose, rather few and large, solitary or in small secondary simple corymbs at the extremity of the stem and branches. Pericline hemispherical; phyllaries linear, with setaceous points, herbaceous with only the tips scarious, pilose and glandular. Florets of the ray numerous, in several rows, with the ligule linear, spreading, much longer than the phyllaries and pappus, flat, toothed at the apex. Achenes hairy. Outer pappus cup-like, the scales of which it is composed combined at the base, and denticulate at the apex; inner pappus about as long as the tubular florets.

In moist places and by the banks of ditches, roadsides, and pastures. Generally distributed in England, and very common in the South; rare in Scotland, not known to occur north of Haddington and the island of Islay.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock extensively creeping and stoloniferous. Stems erect, 8 inches to 2 feet high, round, striate, sparingly hairy. Lower leaves decayed at the time of flowering, and more attenuated at the base than the upper ones; those on the stem spreading. Peduncles woolly, naked, without bracts beneath the phyllaries. Anthodes broader than long. Pericline about $\frac{1}{2}$ inch in diameter. Clinanth with the pits surrounded by elevated margins. Achenes pale-brown. Pappus with the interior row much longer than the achene, brownish-white, the exterior row not longer than the dia-

meter of the achene, surrounding the inner pappus like a cup. Plant green, more or less greyish from the abundance of the soft pubescence. Leaves soft, rugose.

Greater Fleabane.

French, *Aunée Dyssentérique.* German, *Ruhr-Flöhkraut.*

This plant is also sometimes called "the Wild Marigold," and "Job's tears" by the Arabs, who have a tradition that its bruised leaves were applied by Job as a remedy for his grievous diseases; and it is still held by them in high repute as a cure for wounds. Dr. Withering states that the Russian soldiers, in the Persian expedition under General Keit, were much relieved from dysentery by the use of this plant. It is bitter and astringent. Though so common a plant in many parts of our island, it does not appear to have been ever much used by British herbalists.

SPECIES VI.—*INULA PULICARIA.* Linn.

PLATE DCCLXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXXXIII. Fig. 2.

Billot. Fl. Gall. et Germ. Exsicc. No. 2091.

Pulicaria vulgaris, Gärtn. D. C. Prod. Vol. V. p. 478. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 395. *Fries,* Sum. Veg. Scand. p. 3. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 179. *Reich. fil.* l. c., p. 17. *Bab.* Man. Brit. Bot. ed. v. p. 175. *Hook. & Arn.* Brit. Fl. ed. viii. p. 256.

Rootstock none. Stem much and irregularly branched throughout, the lateral branches overtopping the main stem. Lower leaves oblanceolate, upper ones oblong-elliptical or lanceolate, semi-amplexicaul, but with scarcely any auricles, undulated and entire or remotely toothed at the margin, sparingly clothed with soft hairs. Peduncles slightly thickened upwards. Anthodes paniculate, corymbose, numerous, rather small. Pericline sub-globose-campanulate; phyllaries linear, with setaceous points, herbaceous with only the tips scarious, very hairy and glandular on the back. Florets of the ray few, in one row, with the ligule strapshaped, sub-erect, slightly exceeding the phyllaries, concave, toothed at the apex. Achenes hairy. Outer pappus with the scales of which it is composed divided into bristles; inner pappus half as long as the tubular florets.

In places which have been under water during the winter, and by damp roadsides. Rather rare, and sparingly distributed in the South of England, where it occurs as far North as Cambridge, Warwick, and Norfolk.

England. Annual. Autumn.

Stem erect or ascending, repeatedly branched, 3 to 18 inches

high. Leaves numerous, small, withering at the base of the stem before the flowers expand. Pericline $\frac{1}{2}$ to $\frac{3}{8}$ inch across, with the ray inconspicuous from its being short and nearly erect. Achenes brown, hairy. Inner pappus of few hairs, shorter than the achene; outer one of scales divided to the base. Plant dull-green, slightly pubescent and somewhat clammy.

Lesser Fleabane.

French, *Aunée Commune.* German, *Gemeines Flöhlkraut.*

The common name of this plant originates in a belief that its scent is obnoxious to fleas. Gerarde says: "The herb, burried where flies, gnats, fleas, or any venomous things are, doth drive them away."

TRIBE VIII.—ERIGERINÆ.

Leaves alternate or all radical. Anthodes generally heterogamous and radiant. Florets of the disk tubular, perfect, of the ray generally female and ligulate. Anthers without basal appendages. Style of the perfect flowers with the branches compressed, flat above, often acuminate at the apex, with the stigmatic lines marginal, conspicuous, usually not extending quite to the apex of the branches. Achenes generally compressed, with or without ribs. Pappus usually present, composed of hairs, rarely paleaceous or crown-like.

GENUS XXI.—**BELLIS.** *Linn.*

Anthodes heterogamous and radiant, many-flowered. Pericline hemispherical, at length disciform, consisting of 2 rows of nearly equal herbaceous phyllaries. Clinanth conical, naked, pitted. Florets of the disk perfect, regular, with a tubular corolla; those of the ray numerous, in a single row, female, with a ligulate corolla. Achenes compressed from back to front, margined, without ribs. Pappus none.

Perennial or annual herbs, nearly stemless, with the leaves in rosettes. Anthodes solitary, on naked scapes. Florets of the disk yellow, of the ray white, purple, or red.

The name of this genus of plants comes from the word *bellus*, pretty.

SPECIES I.—**BELLIS PERENNIS.** *Linn.*

PLATE DCCLXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXVIII. Fig. 6.

Billot, Fl. Gall. et Germ. Exsicc. No. 255.

Perennial. Stem extremely short, with the leaves in a rosette, obovate-spathulate. Scapes leafless. Phyllaries in 1 row, linear-strapshaped, obtuse.

Pastures and meadows. Very common, and universally distributed.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Rootstock brownish, branched, terminating in short green stems with the leaves usually so approximate as to be in radical rosettes; stems rarely more elongated, and with the leaves in the rosette lax below. Leaves rather suddenly contracted into a short winged petiole, bluntly serrate or crenate-serrate, sub-3-nerved or 1-nerved. Scapes 2 to 8 inches high. Pericline herbaceous. Florets of the disk short, yellow; those of the ray spreading, much longer than the phyllaries, white, often winged with red externally or at the tips. Achenes obovate, compressed, slightly pubescent, whitish. Plant bright-green, sparingly hairy.

The Daisy.

This is the only British species of this genus, whose very name is associated with perpetual beauty. According to Dr. Prior, it is in old English *dæges-eage*, eye of day, from its opening and closing its flower with the daylight,—a name that seems to have delighted Chaucer, who makes long and repeated allusions to it. Skinner, nevertheless, derives it from *dais*, a canopy; and Gavin Douglas seems to have understood it in this sense of a small canopy in the line—

“The daisie did unbraid her crownall small.”

Dr. Prior says: “Had we not the Anglo-Saxon *dæges-eage*, we could hardly refuse to admit that this last is a far more obvious and probable explanation of the word than the pretty poetical thought conveyed in *day’s eye*. Chaucer describes himself as passing whole days, leaning on his elbow and his side,

“For nothing ellis, and I shall not lie,
But for to lokin upon the daisie,
The emprise and flowre of flowres all.”

In another place he gives us the origin of the name:—

“One called eye of the daie,
The daisie, a flowre white and rede,
And in French called La bel Margarete.”

It has been said that his frequent praises of the Daisy were intended as poetical tributes to Margaret, Countess of Pembroke; but of this we have no certain proof. The device of Margaret of Angoulême, “La Marguerite des Marguerites,” the pearl of pearls, as her brother Francis I. fondly called her, was not, as is often said, the Daisy, but the Marigold, which is likewise called “Marguerite” in French. The device of Margaret of Anjou, the unfortunate queen of Henry VI., was the Daisy. The French name *Marguerite* has reference to the resemblance of its pearly bud to the rarer pearls of the ocean. Its Scotch name is *gowan*, and in Yorkshire it is recognized as peculiarly the

flower of childhood, and is called *bairn wort*. The fanciful and poetical names of this little flower are too numerous to mention. The "wee modest crimson-tipped flower" of Burns,—

"'Tis Flora's page ; in every place,
In every season fresh and fair,
It opens with perennial grace,
And blossoms everywhere."

Nowhere has the structure and general appearance of the Daisy been described so pleasantly as in some letters on the elements of botany, by the celebrated philosopher and poet Rousseau ; but he does not appear to have thought of going further into the subject than would be suggested by merely external observation. We have at this day so many appliances at hand to assist our investigations, that if we are disposed to make use of them, we shall find in our little plant much that is most interesting, hitherto undescribed. Having determined to study the Daisy in all its parts, no subject can be obtained with less difficulty. Throughout Great Britain, we find its tiny bright flowers springing up on every "lawn and grassy plot," by waysides, on mountain-slopes, and in almost every country in Europe may we find

"These pearly Arcturi of the earth,
The constellated flowers that never set."

In the extreme north of Europe, however, and in America, it is not common, and is there treasured as a garden flower. Though not exclusively a British plant, yet so closely is the Daisy associated with the earliest recollections of every native of the British isles, that we can scarcely wonder that it is especially dear to the wanderer from home in distant lands, and that it brings back recollections of rural scenes such as cannot be met with elsewhere. There is an old Celtic belief that each new-born babe taken from earth became a spirit which scattered down on the land it had left some new kind of flower to cheer its bereaved parents. The tale is thus told :—"The virgins of Morven, to soothe the grief of Malvina, who had lost her infant son, sung to her—'We have seen, oh Malvina!—we have seen the infant you regret, reclining on a light mist ; it approached us, and shed on our fields a harvest of new flowers. Look, oh Malvina ! among these flowers we distinguish one with a golden disk, surrounded by silver leaves ; a sweet tinge of crimson adorns its delicate rays ; waved by a gentle wind, we might call it a little infant playing in a green meadow ; and the flower of thy bosom has given a new flower to the hills of Cromla.' Since that day the daughters of Morven have consecrated the Daisy to infancy. It is called the flower of innocence,—the flower of the new-born."

The roots of the Daisy have a slightly bitter, astringent taste, and contain, in common with other plants of the same group, a portion of tannic acid. This principle has, however, never been separated, and it is doubtful whether the old recipe of "daisy roots and cream" had more than a fancied efficacy. In looking through old Gerard's writings, we find the Daisy mentioned under the name of "*brutise wort*," as an unfailing remedy in "all kinds of paines and aches," besides curing fevers, inflammations of the liver, and "alle the inward parts."

The Daisy appears as almost interwoven with the materials forming the green carpet of our fields and pastures, so closely does it adapt itself to the circumstances in which it is found. In barren and uncultivated land it becomes a very dwarf, keeping its leaves very near the ground, and with its flower-stalk scarcely raised above the

leaves. In rich mould, and under favourable conditions, its leaves assume a greater size, the stalk rises several inches in height, and all its parts expand in proportion. As it approaches the sandy shores of the sea, it becomes almost stunted, and produces small dark-coloured leaves and minute short-stalked flowers. In counting the number of flowers produced on one head under these various circumstances, we find that both the ligulate and tubular flowers vary from twenty to forty or fifty in number; the colour of the ligulate flowers is also very variable, from white tinged with pink to a deep pink scarcely showing any white whatever. In the cultivated garden Daisy this is very evident; the tubular flowers become almost, if not quite, obsolete, and their place is taken by ligulate flowers, which assume a deep pink colour. In the variety known by the name of "hen and chickens," little flower-buds are formed in the axils of the bracts; sometimes as many as ten or twelve of these minute daisies surround the parent flower; thus suggesting its familiar name.

GENUS XXII.—ERIGERON. *Linn.*

Anthodes heterogamous and radiant, many-flowered. Pericline hemispherical or campanulate or sub-cylindrical, consisting of numerous rows of imbricated herbaceous phyllaries. Clinanth slightly convex, naked, pitted. Florets of the disk perfect or male, regular with a tubular-funnelshaped corolla, sometimes surrounded by tubular female florets; those of the ray female, in numerous rows, all with narrow ligulate corollas. Achenes compressed, not ribbed, often pubescent. Pappus of a single row of hairs with smaller ones intermixed, or with a distinct outer pappus of short hairs or scales.

Herbs with narrow entire usually sessile alternate leaves and solitary or corymbose or paniculate anthodes, with the florets of the disk yellow, those of the ray white or purple, sometimes inconspicuous.

The derivation of the name of this genus is from *epi* (*eri*), an intensive particle, or *eap* (*ear*), early, and *γερων* (*geron*), old, in allusion to the receptacle, which soon becomes like a grey head.

SPECIES I.—ERIGERON CANADENSIS. *Linn.*

PLATE DCCLXXIII.

Weich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXVII. Fig. 1.

Billot. Fl. Gall. et Germ. Exsicc. No. 34.

Annual. Stem paniculately branched. Radical leaves obovate, stalked, serrate; stem-leaves very numerous, linear-strapshaped, mostly entire, bristly-ciliated. Anthodes paniculate or racemosopaniculate. Peduncles generally branched, pilose, not glandular. Pericline cylindrical; phyllaries lax, linear-strapshaped, very

unequal, with broad scarious margins, glabrous. Florets of the disk pale-yellow, perfect; those of the ray erect, linear, ligulate, female, white or flesh-colour, scarcely exceeding the pericline or pappus. Achenes pubescent, shorter than the pappus. Pappus yellowish-white. Plant sub-glabrous or sparingly hairy.

In waste places and newly-turned and cultivated ground. Local. Plentiful near London, and sparing and rather uncertain in its occurrence in other parts of England. Introduced from North America.

[England.] Annual. Late Summer and Autumn.

Stem stiff, erect, 6 inches to 3 feet high, copiously branched with short erect-ascending lateral branches. Leaves very narrow; the lower ones usually shallowly serrated, the upper ones mostly entire. Anthodes very numerous, small, longer than broad. Pericline $\frac{1}{2}$ inch long; phyllaries reflexed after the fall of the achenes. Ray inconspicuous. Achenes whitish. Plant green, sub-glabrous, with the edges of the leaves ciliated with short incurved hairs seated on small tubercles.

Canadian Fleabane.

French, *Vergerette du Canada*. German, *Canadische Dürrwurz*.

The English name of this species is due to its reputed power, when burned, of destroying fleas. According to M. Losanne, in a paper read to the Agricultural Society of Turin, the bark of the plant, after having undergone the process of soaking, may be made into excellent paper.

SPECIES II.—**ERIGERON ACRIS.** *Lin.*

PLATE DCCLXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXVII. Fig. 2.

Willot, Fl. Gall. et Germ. Exsicc. No. 304.

Annual or biennial. Stem paniculately branched. Radical leaves oblanceolate, stalked, entire, apiculate; stem-leaves numerous, sessile and semi-amplexicaul, oblong-strapshaped. Anthodes racemose along the stem and branches, or corymbose in small examples. Peduncles simple or nearly so, hairy, not glandular. Pericline oblong-cylindrical; phyllaries adpressed, not glandular, linear-subulate, glabrous. Florets of the disk yellow, central ones perfect, outer ones female; those of the ray erect, narrowly-linear, ligulate, female, purple, longer than the pericline, and sometimes exceeding the pappus. Pappus reddish-white or white. Plant hairy.

On banks and dry pastures and sand-hills. Rather common in England, but in Scotland only known to occur on the sands of Barrie and Arbroath Links, Forfarshire.

England, Scotland, Ireland. Annual or Biennial.
Summer and Autumn.

Stem erect, slender, reddish, 3 to 15 inches high, simple in small specimens, rather sparingly branched in large ones. Anthodes rather longer than broad. Pericline about $\frac{1}{4}$ inch long. Phyllaries with very slender crimson points, the inner ones scarious; all spreading-reflexed after the achenes fall. Florets of the ray very slender. Achenes slightly hairy, yellowish, shorter than the pappus, which is almost always tinged with rusty red, but sometimes it is nearly white, when it is *E. scrotinus* of Reichenbach. Plant dull-green, clothed with long hairs, those on the leaves with the base enlarged.

Blue Fleabane.

French, *Vergerette Acre*. German, *Scharfe Dürnwurz*.

SPECIES III.—**ERIGERON ALPINUS.** *Linn.*

PLATE DCCLXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXIV. Figs. 1, 2.

Willot, Fl. Gall. et Germ. Exsicc. No. 110.

E. alpinum et *E. uniflorum*, *Sm. Eng. Bot. Nos. 464 and 2416.*

Perennial. Stem simple or with 2 or 3 branches towards the top. Root- and lower stem-leaves narrowly-oblongate, entire, apiculate, sub-petiolate; middle and upper stem-leaves few, sessile, scarcely semi-amplexicaul, oblong-strapshaped; the uppermost linear-strapshaped. Anthodes solitary at the extremity of the stem and branches. Peduncles simple, hairy, not glandular. Pericline hemispherical; phyllaries with the upper portion spreading, hairy, not glandular, linear, very acute. Florets of the disk yellow, tubular, shorter than the pappus, the central ones perfect, the outer ones female; those of the ray spreading or linear, ligulate, female, purple, much longer than the pericline and pappus. Pappus reddish-white. Plant generally very hairy.

On ledges of alpine rocks. Rare. On the Breadalbane mountains in Perthshire, and in Glendole and Canlochen Glen, Forfarshire.

Scotland. Perennial. Autumn.

Rootstock shortly creeping, branched, somewhat woody. Stems in the British specimens 3 to 8 inches high, and in all that I have

seen simple and with a solitary anthode. Lower leaves attenuated into a rather long winged petiole with the wing extending nearly to the base. Anthodes broader than long. Pericline about $\frac{1}{4}$ inch long, the phyllaries with slender crimson points. Florets of the disk yellow, those of the ray bright-purple, very numerous. Achenes pubescent, yellowish, about as long as the pappus. Plant green, rather thickly clothed with articulated hairs in British specimens, but on the Continent the leaves are sometimes nearly glabrous with ciliated edges.

E. uniflorum (Sm. not Linn.) is undistinguishable; the true *E. uniflorus* of continental botanists has the pericline glandular and the tubular flowers all perfect.

Alpine Fleabane.

French, *Vergerette des Alpes.*

GENUS XXIII.—**ASTER.** *Linn.*

Anthodes heterogamous and radiant, or rarely discoid and homogamous, many-flowered. Pericline hemispherical or campanulate, consisting of numerous rows of imbricated herbaceous phyllaries. Clinanth flat, pitted; pits more or less distinctly surrounded by a denticulated membrane. Florets of the disk perfect, with a tubular corolla; those of the ray in a single row, female or neuter, ligulate, more rarely absent. Achenes more or less compressed, without ribs. Pappus of several rows of shortly-ciliated nearly equal hairs.

Perennial (rarely annual) herbs with alternate leaves and corymbose or paniculate or racemose anthodes, with the florets of the disk yellow, sometimes changing to purple; those of the ray white, purple, or blue.

The name of this genus of plants comes from *αστηρ* (*aster*), a star, the flowers assuming the stellate or radiate form.

SECTION I.—**AMELLUS.** *Adans.*

Florets of the disk tubular and perfect; those of the ray ligulate and female, more rarely absent.

SPECIES I.—**ASTER TRIPOLIUM.** *Linn.*

PLATE DCCLXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMVII.

Tripolium vulgare, Nees. D. C. Prod. Vol. V. p. 253.

Stem herbaceous, rather thick, corymbosely or paniculately branched, sparingly leafy. Leaves fleshy, 3-nerved, the radical and lower ones oblanceolate or obovate, attenuated towards the base; those on the upper part of the stem strapshaped, attenuated towards the apex, entire or faintly dentate and smooth at the margins. Peduncles nearly naked, with 1 or 2 bracts below the anthodes. Anthodes usually radiant, in a terminal corymb or corymbose-topped panicle. Pericline oblong-campanulate; phyllaries adpressed, the outer ones elliptical, obtuse, scarious at the summit; inner ones oblong-strapshaped, almost entirely scarious. Achenes pubescent. Pappus about as long as the achene, yellowish-white.

Var. *α*, *genuinus*.

Florets of the ray ligulate, spreading, lilac or white.

Var. *β*, *discoideus*.

Anthodes discoid, without a ray.

In muddy salt marshes. Common, and generally distributed round the whole sea-coast, and along the banks of tidal rivers.

England, Scotland, Ireland. Perennial. Autumn.

Stem stout, 6 inches to $3\frac{1}{2}$ feet high; branches ascending-erect. Leaves variable in breadth. Pericline $\frac{1}{3}$ to $\frac{1}{2}$ inch long. Achenes brownish, very slightly pubescent. Pappus rather dirty-white, not at all tinged with red. Plant dull-green, entirely glabrous except the margins of the upper leaves, bracts, and outer phyllaries, which are sparingly ciliated with very short hairs.

Sea-side Aster.

French, *Aster des Lieux Salés*. German, *Strand-Aster*.

The name Aster is associated, in the minds of most lovers of a garden, with the various and many-coloured autumn flowers of this name. They are, perhaps, the most beautiful of all annual composites. Those which adorn our gardens with their bright blossoms are chiefly of Chinese origin, while the Michaelmas daisies, their perennial congeners, are North American. Our common native sea-side species is not unfrequently gathered and sold for samphire, either by mistake or because it is collected without any risk. According to Dioscorides, it is called Tripolium, because the flower changes its colour three times a day; but no such phenomenon is observed in our climate.

SECTION II.—LINOSYRIS. *D. C.*

Florets all perfect and tubular, ray absent.

SPECIES II.—**ASTER LINOSYRIS.** *Bernh. in Steud. Nom.*

PLATE DCCLXXVII.

*Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMX. Fig. 1.**Billot, Fl. Gall. et Germ. Exsicc. Letter C.**Chrysocoma Linosyris, Linn. Sm. Eng. Bot. No. 2505.*

Linosyris vulgaris, Cass. D. C. Prodr. Vol. V. p. 352. Bab. Man. Brit. Bot. ed. v. p. 174. Hook. & Arn. Brit. Fl. ed. viii. p. 246. Benth. Handbook Brit. Fl. p. 291. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 384. Fries, Sum. Veg. Scand. p. 4. Gr. & Godr. Fl. de Fr. Vol. II. p. 94.

Galatella Linosyris, Reich. fil. l. c., p. 8.

Stems herbaceous, wiry, simple or nearly so, very leafy. Leaves not fleshy, 1-nerved, linear, glabrous, entire, and rough at the margins. Peduncles with bracts below the anthodes, passing gradually into phyllaries. Anthodes in a terminal corymb. Phyllaries lax; the outer ones strapshaped, acute, spreading at the apex; inner ones elliptical, sub-scarious. Florets all tubular and perfect. Achenes pubescent. Pappus about as long as the achene, reddish-white.

On limestone cliffs. Rare. Berry Head, Devon; Worle Hill, Somerset; and Orme's Head, Carnarvonshire. Single specimens have also been found in the Isle of Portland, and between Brighton and Shoreham.

England. Perennial. Autumn.

Stem slender, 4 to 20 inches high. Leaves very narrow, attenuated at each end, 1-nerved, punctate above. Outer phyllaries very narrow, herbaceous; inner ones elliptical, broadly scarious at the margins, acute or abruptly acuminate, yellowish, sometimes tinged with pink. Florets longer than the phyllaries, bright-yellow. Achenes brown with whitish hairs. Pappus dirty-white, often tinged with red. Plant green, glabrous, with the upper part of the stem and peduncles generally puberulent.

According to Dr. C. H. Schultz, a form with radiant anthodes is cultivated under the name of *Galatella linifolia*, *Nees*. (*Archiv. de Flore*, p. 128).

Goldylocks.

French, *Chrysocome à Feuilles de Lin.* German, *Leinkrant.*

GENUS XVII.—**SOLIDAGO.** *Linn.*

Anthodes heterogamous and radiant, few- or many-flowered. Pericline campanulate or cylindrical; phyllaries imbricated in several rows, herbaceous. Clinanth flat, pitted, the pits bordered

by a denticulate membrane. Florets of the disk perfect, regular, with a tubular corolla; those of the ray in a single row, 1 to 16 in number, female, with a ligulate corolla. Achenes fusiform-cylindrical, with numerous ribs. Pappus of a single row of very shortly ciliated hairs.

Perennial herbs with rather rigid stems and sessile or subsessile alternate stem-leaves attenuated at the base. Anthodes small, in racemes, corymbs, or axillary clusters. Florets all yellow, those of the ray very rarely cream-colour.

The name of this genus comes from *solido*, I unite, on account of its reputed efficacy in healing wounds.

SPECIES I.—**SOLIDAGO VIRGA-AUREA.** *Lin.*

PLATES DCCLXXVIII. DCCLXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 36.

Stem round, erect. Radical leaves shortly stalked, oblanceolate or obovate; stem-leaves elliptical or strapshaped-elliptical; all 1-nerved, those of the stem usually entire. Anthodes in a panicle or raceme with the branches erect and straight, not secund. Pericline with linear-acute phyllaries. Ligulate florets 6 to 10, elongated, much longer than those of the disk, and spreading. Achenes finely pubescent.

Var. α , *vulgaris*. Koch.

PLATE DCCLXXVIII.

Lower leaves elliptical-obovate, serrated; upper leaves lanceolate, slightly pubescent, entire. Panicle compound. Anthodes rather small. Stem 1 to 2 feet high.

Var. β , *angustifolia*. Koch.

Lower leaves oblanceolate; stem-leaves narrowly elliptical, often serrate, slightly pubescent. Panicle compound. Anthodes small.

Var. γ , *Cambrica*. Sm.

PLATE DCCLXXIX.

S. Cambrica, *Huds.* *Bor.* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 324.

Lower leaves elliptical-obovate; stem-leaves elliptical; all ciliated and slightly pubescent beneath. Panicle reduced nearly to a raceme. Anthodes large. Stem 2 to 8 inches high.

In woods, thickets, and banks, especially on chalky soil. Rather

common. Var. γ on rocky ledges on mountains, where also α and β occur.

England, Scotland, Ireland. Perennial. Autumn.

A very variable plant. Stem generally 1 to 2 feet high, slightly flexuous at the top, terminated by a long narrow panicle. Leaves very variable in breadth, and in the margin being entire or serrate; lower leaves attenuated at the base; middle and upper ones attenuated at each end, and very acute. Anthodes varying much in the number of the flowers, and consequently in their diameter. Pericline $\frac{1}{8}$ to $\frac{1}{4}$ inch long, with greenish-yellow phyllaries, scarious at the margins, generally pubescent on the back. Florets all bright-yellow, those of the ray strapshaped-elliptical, spreading. Pappus white, much longer than the brown achenes, which are slightly pubescent. Plant green, glabrous or pubescent, the upper part of the stem and rachis, branches of the panicle and pedicels pubescent with curled hairs.

Common Golden-rod.

French, *Verge d'Or Commune*. German, *Gemeine Goldrulle*.

This plant is also called *Wound-wort*, from its reputation as a vulnerary. We may here remark that the terminal *wort*, so frequently occurring in the English compound names of plants, is derived from the Saxon, being a general name for a herb in that language. This form of termination has been largely adopted by Dr. Lindley, whose earnest labours in the field of botanical research and nomenclature are suddenly ended as this page goes through the press. He believed that the progress of Botany as a science was greatly impeded in this country by the repulsive appearance of the names which it employs, and he endeavoured, in many instances, to substitute English names for the Latin or Greek compounds, by which the genera of plants are distinguished. Writing on this subject in the introduction to his great work, "The Vegetable Kingdom," he says, "The attempt has been already made in the author's 'School Botany,' where it will be found that by availing himself of well-known English names of the English word '*wort*,' a uniform English nomenclature has been secured for all the common European natural orders of plants."

This Golden-rod, or *Wound wort*, is a favourite remedy with our old friend Gerarde. He tells us that it obtained a high price as a foreign herb till discovered growing near London, after which it was neglected, "which plainly setteth foorth our inconstancie and sudden mutabilitie, esteeming no longer of any thing (how pretious soever it be) than whilst it is strange and rare. This verifieth our English proverbe, 'Far fetched and deere bought is best for ladies,' or rather for fantastickall physitions. Thus much have I spoken to bring these new fangled fellows backe againe to esteeme better of this admirable plaute." Dr. Withering quotes Dr. Molyneux, who says, "*Pulvis foliorum aut florum, vel integræ herbæ exsiccata, et in nares attractus sternutationes fortissimè excitat.*" "But what," says the old Doctor, "will the modern beaux think of the commentary of another physician, who says, 'I look upon common snuffing to be the meanest way of debauchery; hurting the eyes and ears and shocking the senses, stuffing the stomach and lungs, and most practised by the most unpolite of men.'" In modern times, we are somewhat relieved from this "mean practice of snuff-taking;" but what shall we say of the increasing habit of smoking?

TRIBE IX.—TUSSILAGINEÆ.

Leaves chiefly radical. Anthodes heterogamous and radiant, or sub-polygamo-dioecious and radiant or discoid. Florets of the disk tubular, sub-male, and those of the ray female and ligulate, or in the sub-dioecious forms the female florets often tubular or with a very short ligule. Anthers without basal appendages. Style with the branches semi-cylindrical or cylindrical (short and connivent, or obsolete in the sub-male florets), papillose externally towards the summit, the stigmatic lines inconspicuous, terminating near the middle of the branches of the style, not confluent. Pappus consisting of scabrous or plumose hairs.

GENUS XXV.—TUSSILAGO. *Linn.*

Anthodes many-flowered, heterogamous and radiant. Pericline composed of unequal herbaceous phyllaries arranged in 2 rows. Clinanth flat, pitted. Florets of the disk few, tubular, sub-male, those of the ray female, in numerous rows and ligulate, or few and tubular. Style with short erect semi-cylindrical blunt branches, stigmatiferous throughout. Achenes fusiform-cylindrical. Pappus of long nearly simple hairs.

Perennial herbs, with cordate radical leaves and scaly scapes, terminated by solitary anthodes with yellow or purple florets.

The derivation of the name of this genus of plants is from *tussis*, a cough, the plant being considered useful in allaying pectoral disorders.

SPECIES I.—TUSSILAGO FARFARA. *Linn.*

PLATE DCCLXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2080.

Leaves roundish, shallowly scalloped and very finely denticulate, cordate, arachnoid-floccose when young, at length glabrous above, white-cottony beneath. Scapes 1-flowered. Florets yellow, those of the ray ligulate.

Waste places, fields, river-sides, &c. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Early Spring.

Rootstock creeping, with elongated stolons. Leaves appearing after the first flowers, rather shortly stalked, 4 to 10 inches across, the basal lobes rather short, diverging. Scapes solitary or several.

from the same point, rather slender, 3 inches to 1 foot high, with scale-like empty bracts. Anthodes terminal, erect while the flowers are expanded, then drooping, and ultimately erect. Pericline $\frac{1}{2}$ to $\frac{3}{4}$ inch long; phyllaries sub-scarious, rather obtuse, slightly hairy except at the tips. Florets of the disk few, those of the ray numerous; all bright-yellow. Style of the disk-flowers scarcely cleft, that of the female florets with 2 rather long oblong-cylindrical obtuse branches. Achenes pale-brown, angular. Pappus pure white, of rough hairs, nearly three times as long as the achene. Plant light-green; the leaves white when young, and remaining more or less so beneath; scapes whitish, with the scale-like bracts generally reddish, at least at the tips.

Common Coltsfoot.

French, *Tussilage Pas d'Ane.* German, *Gemeiner Huflattich.*

This plant has an ancient reputation in medicine. Pliny records its being used for smoking, and recommends it as a remedy for obstinate colds and coughs, and recommends both the roots and leaves. The leaves are the basis of the British herb tobacco. Dr. Cullen recommends their use in scrofulous cases. He says: "The expressed juice of the fresh leaves, taken to some ounces every day, has in several instances occasioned the healing up of scrofulous sores; and even a strong decoction of the dried leaves, employed as Fuller proposes, seems to have answered the same purpose." The seeds of this plant are said to be used by the Highlanders for stuffing mattresses; and the downy substance on the under surface of the leaves, wrapped in rag dipped in a solution of saltpetre and dried in the sun, makes the best tinder. In Johnson's "Useful Plants of Great Britain," we are told that the underground stems of the *Tussilago* preserve their vitality for a long period when buried deeply; so that in places where the plant has not been observed before, it will often spring up in profusion after the ground has been disturbed. In such situations, where the earth is of a loose loamy texture, the plant often does good service by binding the earth with its widely-spread stems; but in pastures or gardens it is a troublesome weed, very difficult to extirpate when once established. The name *Coltsfoot* is given to the plant from the shape of the leaf, which is fancifully supposed to resemble the foot of a colt. The specific name *Farfara* is derived from *Farfarus*, an ancient name of the white poplar, the leaves of which present some resemblance in form and colour to those of this herb.

GENUS XXVI.—PETASITES. *Tournef.*

Flowers sub-dioecious or polygamo-dioecious; some individuals with anthodes heterogamous, generally discoid, having in the centre numerous perfect florets (or rather *sub-male*, as they seldom produce seed), and a few female florets in a single row round the circumference; others with the anthodes having 1 to 5 sub-male florets in the centre surrounded by numerous rows of female florets. Pericline composed of unequal imbricated phyllaries arranged in 2 or 3 rows. Clinanth flat, pitted. Perfect florets with the corolla tubular-campanulate, regular; female florets with the corolla fili-

form and obliquely truncate at the summit, or more rarely terminated by a short ligulate limb. Style with semi-cylindrical thick obtuse branches, stigmatiferous all over. Achenes fusiform, cylindrical, crowned with a hairy pappus, longer and of more numerous hairs in the female florets.

Perennial herbs, with cordate radical leaves and scapes with scaly bracts or small alternate leaves, terminated by a corymb raceme or thyrsus of anthodes of white or pale-purple florets, appearing with or before the leaves.

The name of this genus comes from *πετασος* (*petasos*), a cover, which the leaves afford.

SECTION I.—NARDOSMIA. *Cuss.*

Corolla of the female florets terminated by a short ligule.

SPECIES I.—PETASITES FRAGRANS. *Presl.*

PLATE DCCLXXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. DCCCXCVI.

Nardosmia fragrans, Reich. Fl. Excurs. p. 280. D. C. Prod. Vol. V. p. 205.

Tussilago fragrans, Vill.

Leaves evergreen, round, deeply cordate, with the lobes sub-parallel, finely or evenly denticulate; at first arachnoid-floccose, at length glabrous above,—pale-green, sparingly downy and with articulated hairs beneath. Florets in a roundish-ovoid or oblong-ovoid racemose panicle, scarcely elongating after flowering. Phyllaries acute. Corolla of the female florets filiform, terminated by a distinct though short ligule. Branches of the stigma in the sub-male florets rather short, sub-cylindrical, acute.

Roadsides and plantations. Completely naturalized in many places, as in the Isle of Wight, Upper Deal (Kent), Surrey, Middlesex, banks of the Esk above Musselburgh, &c.

[England, Scotland.] Perennial. Winter and early Spring.

Rootstock extensively creeping. Leaves appearing in spring, and in favourable situations remaining green until the young leaves appear in the succeeding season, 4 to 8 inches across, with a very deep sinus; the lobes sub-parallel at the base, and then diverging (a small portion of the base of the lobe is bounded by the lateral veins, but not so large a part as in *P. vulgaris*). Scapes 4 to 9 inches high, with scale-like empty bracts, the lower ones often terminated by a small lamina. Anthodes very shortly stalked. Pericline about $\frac{1}{2}$ inch long. Corolla pale-lilac. Anthers purple. Style-branches

white. Plant deep-green; leaves pale beneath, remaining arachnoid on the petioles and veins. Flowers with the scent of vanilla.

Sweet-scented Coltsfoot, or Winter Heliotrope.

French, *Tussilage Parfumé.*

SECTION II.—EU-PETASITES. *Gr. & Godr.*

Corolla of the female florets filiform, obliquely truncate but not ligulate at the apex.

SPECIES II.—**PETASITES ALBUS.** *Gärtn.*

PLATE DCCLXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. DCCCXCIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 383.

Tussilago alba, Linn. Sp. Pl. p. 214.

Leaves roundish, deeply cordate with the lobes sub-parallel, coarsely dentate and sharply denticulate, at first arachnoid-floccose, at length glabrous above and white-cottony beneath. Sub-male flowers in a roundish- or shortly-ovate racemose panicle, scarcely elongating after flowering; the female in a longer and more lax racemose panicle, which becomes lax and rather elongated after flowering. Phyllaries sub-acute. Corolla of the female florets filiform, obliquely truncate but not ligulate at the apex. Style of the sub-male florets with the branches elongated, linear-subulate, acute.

In waste places, roadsides, and woods. Introduced. "A large patch of this early-flowering plant occurs in an oak wood north of the Hall" (P. Inebald, Storthes Hall, near Huddersfield, in *Phytol. Vol. III. p. 445*); "road-side at Mains Castle, Forfarshire, abundant, and perfectly naturalized" (Professor George Lawson); Rubislaw, Aberdeen (the late J. S. Ogilvie); and in Corby Den, Kingcausie, Kincardineshire.

[England, Scotland.] Perennial. Spring.

Extremely like *P. vulgaris*, but smaller, the leaves 6 inches to 1 foot across, more deeply scalloped, so that the teeth project, the denticulations between them much sharper, the basal lobes with the parenchyma developed from the base, so that no part of the lobe is bounded by the lateral veins. Anthodes few. Pericline about $\frac{1}{2}$ inch long, with the phyllaries acute, slightly hairy on the back. Florets white or cream-colour. Corolla of the sub-male florets larger, style more protruded and with much longer and more acute branches than in *P. vulgaris*.

In the three Scottish localities mentioned it is the sub-male plant which occurs. It is included in this work not because it is perfectly naturalized, but because it may be confounded with *P. vulgaris*—my specimens from Rubislaw are so named.

White Coltsfoot.

French, *Tussilage Blanchâtre.* German, *Weisse Neunkraft.*

SPECIES III.—**PETASITES VULGARIS.** *Desf.*

PLATE DCCLXXXIII. (the sub-male plant) ; DCCLXXXIV. (the female plant).

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. CMI.

Billot, Fl. Gall. et Germ. Exsicc. No. 2861.

P. officinalis, Mönch. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 383. *Gr. & Godr.* Fl. de Fr. Vol. II. p. 89.

Tussilago Petasites, Linn. Sm. Eng. Bot. No. 431 (sub-male plant). *Benth.* Handbook Brit. Fl. p. 289.

Tussilago hybrida, Linn. Sm. Eng. Bot. No. 430 (female plant).

Leaves roundish, deeply cordate with the lobes not contiguous, dentate and denticulate, at first arachnoid-floccose, at length glabrous above and grey-cottony beneath. Sub-male florets in a short conical-oblong racemose panicle or raceme, scarcely elongating after flowering; the female in a longer and more lax racemose panicle or raceme, which becomes lax and much elongated after flowering. Phyllaries rather obtuse. Female florets filiform, obliquely truncate. Branches of the stigma in the sub-male florets very short, ovoid-obtuse.

In wet places, especially by the sides of streams. Not uncommon in England and the South of Scotland; rare north of the Forth and Clyde. The female plant rare.

England, Scotland, Ireland. Perennial. Spring.

Rootstock creeping, fleshy. Leaves, when full-grown, very large, on stout hollow channelled petioles; lamina sometimes 3 feet in diameter, deeply cordate at the base, scalloped at the edges, with the portions between the projections finely toothed: the leaves at first are arachnoid above and densely so beneath, but when mature most of the covering disappears, though they still remain grey and more or less arachnoid beneath. Scapes produced before the leaves, or as the latter are beginning to appear, 4 inches to 1 foot high, with pale-greenish lanceolate empty bracts, which have sometimes a small lamina at the apex; upper bracts strapshaped or linear-acute. Anthodes very numerous. Pedicels in the sub-male plant very short, simple, or sometimes 2- or 3-flowered,—longer and more slender in

the female. Pericline $\frac{3}{8}$ to $\frac{1}{2}$ inch long in the sub-male, $\frac{1}{6}$ to $\frac{1}{4}$ inch in the female plants. Phyllaries sub-scarious at the margins, generally purplish, longitudinally veined. Corolla pale reddish-purple in the sub-male florets, with a bell-shaped limb,—in the female very slender; and the latter have the branches of the style also more slender. Pappus white, longer than the yellowish-brown cylindrical achenes. Plant dull-green; the scapes generally purplish, decaying early in the sub-male plant, which rarely produces seed.

M. Jordan divides this into two, *P. riparia* and *pratensis*: of these I have not seen authentic specimens, but, judging from the descriptions, the British plant (so far as I have seen) is *P. riparia*.

Common Butter-bur.

French, *Tussilage Pétasite*. German, *Gebriüchliche Neunkraft*.

TRIBE X.—EUPATORIÆ.

Leaves opposite, more rarely verticillate or alternate. Anthodes almost always homogamous and discoid. Florets generally all tubular and perfect, or more rarely the exterior ones female and tubular, or very rarely female and ligulate. Anthers without basal appendages. Style with the branches usually much elongated, obtuse or clavate, with the stigmatic lines inconspicuous, terminating near the middle of the branches of the style, not confluent. Pappus generally present, consisting of rough or plumose hairs, more rarely of chaffy scales or crown-like.

GENUS XXVII.—EUPATORIUM. *Tournef.*

Anthodes homogamous and discoid, 3- or many-flowered. Pericline cylindrical or bell-shaped; phyllaries few, imbricated. Clinanth flat, naked. Florets all perfect, cylindrical-funnel-shaped. Styles with very long pubescent branches, which are stigmatiferous only below. Achenes 5-angled-prismatic. Pappus of denticulate hairs, arranged in a single row.

Perennial herbs, with the leaves generally opposite or verticillate, more rarely alternate, frequently sprinkled with resinous dots. Anthodes small, generally arranged in compound corymbs, more rarely in panicles; florets white, pink, purplish, or blue.

This genus of plants is supposed to be named after Eupator, a surname of Mithridates, king of Pontus, by whom the plant was introduced as an alexipharmic.

SPECIES I.—**EUPATORIUM CANNABINUM.** *Linn.*

PLATE DCCLXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XVI. Tab. DCCCXCII.*Billot.* Fl. Gall. et Germ. Exsicc. No. 33.

Radical leaves oblanceolate, long-stalked; stem-leaves opposite, shortly stalked, mostly ternate-partite, with 3 elliptical acuminate serrate segments; those of the branches simple, ovate or lanceolate; all with distant short hairs, and sparingly sprinkled with small inconspicuous resinous dots. Anthodes with about 5 florets, in dense compound fastigiate corymbs. Pericline cylindrical; phyllaries unequal, imbricated, the external ones ovate or broadly lanceolate, the inner ones oblong-strapshaped, sub-scarious. Pappus white, longer than the achene.

In damp places by the sides of rivers, and at the base of cliffs on the sea-shore. Common, and generally distributed, extending North to Ross and Sutherlandshire.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Rootstock woody. Stems erect, puberulent, round, striate, 1 to 5 feet high, with short axillary branches. Stem-leaves divided to the base into 3 (more rarely 5) segments, or in small plants undivided. Pericline $\frac{1}{4}$ inch long, with the phyllaries scarious, and generally purple towards the apex. Corolla with 5 short teeth, pale reddish-lilac or nearly white. Anthers brown. Styles white, very long. Achenes prismatic, blackish, sprinkled with resinous dots, with 5 very prominent ribs; hairs of the pappus dirty-white, denticulate, caducous. Plant dull-green, slightly pubescent.

Common Hemp-Agrimony.

French, *Eupatoire à Feuilles de Chanvre.* German, *Haufartiges Kuniigundenkraut.*

The leaves of this plant are used in infusion as a tonic, and in the fenny districts, where it prevails, such medicines are very necessary. Country people lay the leaves near bread, and they consider that they thus prevent it from becoming mouldy. It is called Hemp-Agrimony from the resemblance of its leaves to those of *hemp*, and its being classed by the old herbalists with Agrimony under the general name of *Eupatorium*, or, as Gerarde writes it, *Hepatorium*.

SUB-ORDER III.—LIGULIFLORÆ.

Florets all ligulate and perfect.

Herbs, with the juice generally milky, the leaves and phyl-

laries seldom spinous. Pericline* commonly cylindrical or oblong-ovoid.

TRIBE I.—HYOSERIDEÆ.

Pappus crown-like or of scales or awns, sometimes wholly absent.

GENUS XXVIII.—CICHORIUM. Linn.

Anthodes few- or many-flowered. Pericline cylindrical; phyllaries in 2 series, the inner row of 8 or 10 phyllaries at length indurated and united at the base, the outer row of 5 short lax ones. Clinanth pitted and fibrillous. Achenes irregularly prismatic, attenuated at the base, truncate at the apex. Pappus of 1 or 2 rows of fimbriated scales.

Herbs, with runcinate-pinnatifid or entire radical leaves; and branched stems with sessile axillary, and stalked terminal anthodes. Florets pale bright-blue. Achenes persistent.

The origin of the name of this genus of plants is an Arabic word, *chikourysh*. By the Greeks it was sometimes written *κίχωριον* (*kichorion*); whence, among the simple fare of Horace,

“ Me pascunt olivæ,
Me cichorea levesque malvæ.”

SPECIES I.—CICHORIUM INTYBUS. Linn.

PLATE DCCLXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLVII. Fig. 2.

Stem erect, paniculately branched; branches virgate, spreading-ascending, not spinous. Lowest leaves oblanceolate, runcinate-pinnatifid or dentate; upper stem-leaves lanceolate, semi-amplexicaul, repand-denticulate or entire, all glandular, ciliated. Anthodes many-flowered, sessile and axillary in pairs or threes, and solitary at the extremity of the peduncles, which are scarcely thickened upwards. Exterior phyllaries broadly lanceolate, shorter than the interior, ciliated with gland-tipped hairs. Achenes surmounted by a circle of numerous short obtuse scales fimbriated at the summit.

By roadsides, on borders of fields, banks, and waste places. Generally distributed in England, and common in chalky districts;

* The shape of the pericline described is that which it has previous to the expansion of the florets; when that has taken place, it assumes a more or less bell-shaped form, and in fruit usually becomes somewhat conical.

rare in Scotland, though occurring as far North as Dumbarton, Moray, and Aberdeen.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Root large, tapering, fleshy. Stem rough, with short woolly hairs, 1 to 4 feet high. Radical and lower stem-leaves large, varying much in the depth of the incisions; upper stem-leaves small, with branches or peduncles in their axils. Anthodes numerous, 1 to 1½ inch across. Florets pale bright-blue, varying to white. Achenes ⅙ inch long, obovate, truncate at the apex, irregularly angular, pale or marbled. Plant green, generally rough with small hairs, especially on the midrib of the leaves beneath, but sometimes nearly glabrous.

In the cultivated form the radical leaves are usually entire or nearly so.

Wild Succory.

French, *Chicorée Sauvage*. German, *Gemeine Wegwarte*.

The bright and beautiful blue colour of the blossoms of the Chicory cannot fail to attract the most unobservant of pedestrians by the road- or hedge-side, though, perhaps, few recognize in it the plant about which so much has been written and said as an agent in the adulteration of coffee. In Germany, and some parts of the Netherlands and France, it is extensively cultivated for the sake of its roots, which are used as a substitute for coffee. They are not unwholesome used in this way, but they are destitute of any principle like caffeine, which would supply the place of that substance in diet; neither have they the aromatic flavour or essential oil which belongs to the coffee berry. Chicory has little to recommend it but its cheapness, and this circumstance has caused its extensive employment, not alone as a substitute but as an adulteration of coffee. Some short time since a report was drawn up by Dr. Letheby and Dr. Hassall on the properties of Chicory, in which they say, "No one who is acquainted with the respective properties of chicory and coffee can for a moment entertain the opinion that the former can be effectively substituted for the latter." They point out that the two substances differ very materially from each other in their botanical nature, one being a fruit or seed of a tree, while the other is the succulent root of an herbaceous plant. "Now it is a well-ascertained fact, that of all parts of vegetables the fruit and seeds usually possess the most active properties. This is no doubt due to the circumstance of their being freely exposed to the influence of light and air, agencies which promote chemical changes in plants, and so effect the elaboration of those complex organic substances on which the activity of vegetables depends. On the other hand, it must be manifest, that as the roots are removed from the influence of these powerful agencies, they cannot be so richly endowed with active properties; and, indeed, there are but few roots which contain either alkaloids or volatile oils—the two classes of constituents which give to coffee its peculiar virtues." In the preparation of Chicory the older roots are selected; they are first cleansed in a very imperfect manner by washing, then cut into slices and dried in a kiln; in this state they are furnished to the chicory-roaster, who submits them to a rough kind of roasting process, somewhat

similar to that employed for the torrefaction of coffee ; after which they are powdered, the powder itself being frequently adulterated. In specimens of chicory-powder examined by the above-named gentlemen, adulterations were discovered of various kinds—carrots, parsnips, beans, mangel-wurzel, a Turkish plant known as *caffina*, roasted corn, biscuit-powder, burnt sugar, and red earth, were all detected by the aid of the microscope and chemical tests. Chicory is possessed of active medicinal properties, in consequence of which it has long been included in the *Materia Medica*. Its properties so closely resemble those of the dandelion, that we quote the following observations of Dr. Pereira on the latter plant :—"Its obvious effects are those of a stomachic and tonic. In large doses it acts as a mild aperient. Its diuretic action is less obvious and constant. In various chronic diseases its continued use is attended with alterative and resolvent effects ; but where the digestive organs are weak and readily disordered, taraxacum is very apt to occasion dyspepsia, flatulence, pain, and diarrhœa." These remarks, of course, apply to the recent root ; and, in order to ascertain the effects of roasted chicory on the human system, Dr. Letheby and Dr. Hassall undertook to experiment. Three persons partook of a chicory breakfast : the infusion was dark-coloured, thick, destitute of the agreeable and refreshing aroma so characteristic of coffee, and was of a bitter taste. Each individual experienced for some time after drinking the infusion a sensation of heaviness, drowsiness, a feeling of weight at the stomach, and great indisposition to exertion ; in two headache set in, and in the third diarrhœa came on. In repeated trials of the chicory nearly the same symptoms appeared ; and it would appear, from these experiments, that at least some doubt is attached to the assertion of the "wholesome" properties of chicory as an article of diet. With regard to the economy and advantage of the admixture of chicory with coffee, we entirely disagree with those who advocate it. At one time the grocer was permitted to sell this mixture without incurring the risk of law or penalty of any kind. This substitution of chicory for coffee occasioned a loss to the revenue of £3,000 a year, besides its mischievous effect in adulterating and debasing a popular beverage when used in such large and undue proportions for admixture, and sold at the price of coffee. This state of things had to be remedied, and the grocers were compelled either to sell their chicory in a separate packet, or, if mixing it with the coffee, to say so on a label outside each packet. We find that competent writers on the subject state that there is good reason to believe that chicory, from its narcotic character, exerts an injurious effect on the nervous system ; and the celebrated German oculist Professor Beer, of Vienna, enumerates chicory-coffee as among the causes of amaurotic blindness. In order to show the great advantage of purchasing coffee whole, and grinding it as required, we quote from a little work, published by Mr. P. L. Simmonds, entitled "Coffee as it is, and as it ought to be :"—"In various parts of the metropolis, but more especially in the east, are to be found liver-bakers. These men take the livers of oxen and horses, bake them and grind them into powder, which they sell to the low-priced coffee-house keepers at from fourpence to sixpence per pound, horses' liver coffee bearing the highest price. It may be known by allowing the coffee to stand until cold, when a thick pellicle or skin will be found on the top. It goes further than coffee, and is generally mixed with chicory and other vegetable imitations of coffee. Dissolved in water, and set aside for a few days, it became extremely offensive and corrupt, showing that it consisted of some imperfectly charred animal matter."

In some parts of Belgium the roots of Chicory are boiled and eaten like parsnips.

Chicory was known to the Romans, and Horace notices it under the name of *Cicorea* : it was undoubtedly eaten by them as a salad or pot-herb. Gerard informs

as that "the leaves of Chicory are boiled in potage or broths for sick and feeble persons, that have hot, weak, and feeble stomachs, to strengthen the same." The leaves are sold in some of the London markets as a salad; they are cultivated in the same way as celery, and are earthed up so as to blanch the stems; or the roots are planted in sand, in alternate layers, with the tops outwards, in a cellar from which the light is nearly excluded. The leaves thus deprived of light become long and white, and are nearly destitute of that bitter flavour present when they are grown in the open air. They are known by the name of *Barbe de Capucin*, and find favour in this country, though not so commonly as in France and Germany.

Several agricultural writers have recommended Chicory as a fodder plant. Its cultivation on the Continent with this view seems to be very successful. Near Paris large crops are grown, and are much relished by sheep and cattle. The only drawback to its cultivation seems to be the difficulty of converting the broad succulent leaves into hay. Thirty-eight tons of fodder have been obtained from a single acre of Chicory during the second and third years of its growth, and nearly twenty tons the first year, by cutting it two or three times during the season. Objections to its use have, however, been strongly urged, and some farmers say that it gives an unpleasant taste to the milk of cows feeding upon it. It will grow in almost any soil, and for use as a salad may be easily cultivated in the kitchen-garden. The leaves have been used in dyeing, and a patent was taken out some years ago for preparing them in the same way as woad; but it does not appear to have been successful.

GENUS XXIX.—LAPSANA. Linn.

Anthodes several-flowered. Pericline cylindrical-ovoid; phyllaries in 2 series, the inner row of 8 or 10 equal phyllaries, the outer row of several very minute adpressed ones. Clinanth naked. Achenes fusiform-cylindric, 20-ribbed, attenuated at the base, suddenly contracted at the apex, without any pappus or elevated margin.

Herbs, with lyrate-pinnatifid lower leaves; and branched stems with small stalked anthodes. Florets pale-yellow. Achenes caducous.

The name of this genus of plants comes from the Greek word λαπτω (*lapto*), I suck, in allusion, we suppose, to the reputed use of one of the species in curing sore nipples.

SPECIES I.—LAPSANA COMMUNIS. Linn.

PLATE DCCLXXXVII.

Willot, Fl. Gall. et Germ. Exsicc. No. 1693.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLIII. Figs. 2, 3, 4.

Lampsana communis, D. C. Prod. Vol. VII. p. 76, et *Auct. Plur.*

Stem paniculately branched. Lower leaves lyrate-pinnatifid, with a very large terminal lobe, which is often cordate or sub-cordate at the base, and a few small lateral lobes or sometimes merely an entire herbaceous strip along each side of the

petiole; upper leaves rhomboid-ovate or -lanceolate or -elliptical; all sparingly dentate or the uppermost ones entire on the margin. Anthodes numerous, in a corymbose-topped panicle with elongated slender pedicels. Pericline angular in fruit, sub-glabrous or with gland-tipped hairs; outer phyllaries very minute.

By roadsides, in waste places and cultivated ground. Very common, and generally distributed.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem erect, 8 inches to 3 feet high, with ascending branches in the upper part. Leaves variable, the large terminal lobe of the lower leaves being sometimes acute, sometimes obtuse, and having the teeth varying in size and sharpness. Anthodes $\frac{1}{4}$ to $\frac{1}{2}$ inch across. Florets pale-yellow. Achenes $\frac{1}{6}$ to $\frac{1}{4}$ inch long, brownish-yellow, more or less curved. Phyllaries keeled in fruit. Plant green, glabrous or hispid-pubescent; the pedicels and midrib of the phyllaries sometimes clothed with gland-tipped hairs.

Common Nipple-wort.

French, *Lapsane Commune*. German, *Gemeine Rainkohl*.

Besides the use to which this plant was applied by old English herbalists, and from which the name of the genus is derived, it was at one time eaten as a salad, or boiled after the manner of greens. Withering tells us that "*Lapsana vivere*" is a proverb which signifies to live hard, in allusion to Caesar's army, which is reported to have sustained life for some time by eating the roots of this herb.

GENUS XXX.—ARNOSERIS. *Gärtn.*

Anthodes many-flowered. Pericline campanulate-ovoid (at length sub-globose); phyllaries in 2 series, the inner row of 12 or more phyllaries at length indurated and connivent with the extreme tips reflexed, outer row of several extremely short ones. Clinanth naked. Achenes obovate-prismatic, 5-ribbed, attenuated at the base, truncate at the apex, and surmounted by a narrow membranous border or crown-like pappus.

A glabrous annual, with the leaves all radical, dentate. Scapes branched, few-flowered, inflated under the solitary anthodes. Florets yellow. Achenes persistent.

The name of this genus comes from *αρνος* (*arnos*), a lamb, and *σεις* (*seris*), succory: it is sometimes called lamb's lettuce.

SPECIES I.—ARNOSERIS PUSILLA. *Gärtn.*

PLATE DCCLXXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1249.*Reich.* Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLIV. Fig. 1.*Hyoseris minima*, *Linn.* *Sm.* Eng. Bot. No. 95.*Lapsana pusilla*, *Willd.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 233.

Leaves oblanceolate, toothed, nearly glabrous. Scapes numerous, simple or slightly branched with the branches often exceeding the main stem, gradually inflated and fistulous beneath the anthodes. Anthodes sub-globular, drooping before expansion.

On sandy ground and in dry fields. Local. Occurring in Hants, Kent, Surrey, Essex, Norfolk, Suffolk, Cambridge, and it has likewise been reported from Cornwall, Somerset, Dorset, and a few other English counties; also in the counties of Forfar, Moray, and Aberdeen: but perhaps it is not native in Scotland.

England, Scotland. Annual. Late Summer
and Autumn.

Radical leaves in a rosette, varying much in the size of the teeth. Scapes 3 to 12 inches high, simple or with 2 or 3 curving-erect branches. Anthodes $\frac{1}{4}$ to $\frac{1}{2}$ inch across. Phyllaries acuminate, puberulent. Florets yellow. Achenes olive, pentagonal, with strong prominent ribs, the interstices rugose; crown very short. Plant green, sub-glabrous.

Swine's Succory.

French, *Lampsane Minima*. German, *Kleines Lammkraut*.

TRIBE II.—SCORZONEREÆ.

Pappus of the achenes (or at least those in the middle of the anthode) of plumose hairs, often thickened at the base.

GENUS XXXI.—HYPOCHÆRIS. *Linn.*

Anthodes many-flowered. Pericline oblong-ovoid or oblong-cylindrical; phyllaries numerous, equal, imbricated in several rows. Clinanth furnished with large scarious lanceolate acuminate pales, which are deciduous with the achenes. Achenes muricated, with or without beaks. Pappus of scabrous hairs, sometimes all plumose, sometimes with shorter simple ones on the outside.

Herbs, with the leaves mostly radical. Anthodes solitary or in a lax corymb, large or rather large. Florets yellow.

The name of this genus comes from two Greek words, *hypo* (*hupo*), under, and *χοίρει* (*choiros*), a pig, because swine are supposed to delight in certain species.

SUB-GENUS I.—EU-HYPOCHÆRIS.

Hairs of the pappus in 2 rows, the outer ones shorter and not plumose, the inner plumose.

SPECIES I.—HYPOCHÆRIS GLABRA. Linn.

PLATE DCCLXXXIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1251.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCXCVIII. Figs. 2, 3, 4.

Annual. Leaves in a rosette, oblanceolate-strapshaped or oblanceolate, sinuate-pinnatifid or dentate, glabrous or subglabrous. Stems scape-like, usually numerous, slender, erect or ascending, slightly branched. Peduncles elongated, slightly thickened upwards, very sparingly furnished with bracts below the anthodes, and often destitute of them. Pericline oblong-ovoid in bud; phyllaries few, glabrous, the innermost ones about as long as the florets, the outer ones adpressed. Achenes mucated, the inner ones produced into a beak at the apex, the outer ones without a beak, or more rarely with a beak.

Var. *α*, *genuina*.

Achenes of the circumference without a beak, those of the centre with a beak as long as themselves.

Var. *β*, *Balbisii*.

H. Balbisii, *Lois*, Fl. Gall. Vol. II. p. 180.

All the achenes furnished with beaks.

In sandy cultivated fields and waste places. Rather rare, and sparingly distributed over England; in Scotland occurring in the counties of Ayr, Forfar, and Moray.

England, Scotland. Annual. Late Summer and Autumn.

Leaves spreading in a rosette, varying much in the depth of the dentation or sinuation. Flowering-stems 3 to 18 inches high, commonly leafless, but sometimes with 1 or 2 small sessile leaves.

Pericline oblong in flower; phyllaries unequal, strap-shaped, suddenly acuminate. Florets rather few, pale-yellow. Pales about as long as the florets, narrowly-lanceolate with reddish setaceous points. Achenes reddish-brown, cylindrical, the centre ones terminated by a slender beak; in var. β the exterior florets are abortive, according to Professor Grenier. Pappus yellowish-white. Plant glabrous or sub-glabrous, pale-green.

Smooth Cat's-ear.

French, *Porcelle Glabre.* German, *Kahles Ferkelkraut.*

The common name of this plant is from the shape of its leaves, which might be supposed to resemble a cat's ear. It was also called Swine's Succory and Gum Succory. Gerarde tells us that "the root and leaves tempered with honey, and made into trochisks or little flat cakes, with nitre or saltpetre added to them, cleanse away the morphea, sunburnings, and all spots of the face."

SPECIES II.—HYPOCHÆRIS RADICATA. Linn.

PLATE DCCXC.

Billot, Fl. Gall. et Germ. Exsicc. No. 3134.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCXCVII.

Perennial. Leaves in a rosette, oblong-oblanccolate or lanceolate, sinuate-pinnatifid or dentate, sometimes runcinate, usually hispid. Stems scape-like, numerous, rather slender, erect or ascending, more or less branched. Peduncles elongated, thickened upwards, and furnished with numerous small bracts beneath the anthodes. Pericline globular-turbinate in bud; phyllaries numerous, generally ciliated on the midrib, the inner ones considerably shorter than the florets, the outer ones rather lax. Achenes strongly muricated, all more or less evidently produced into a beak at the apex.

In fields, pastures, and waste ground. Very common, and generally distributed, extending to Orkney.

England, Scotland, Ireland. Perennial or biennial?

Summer and Autumn.

Leaves numerous, much larger and firmer in texture than those of the preceding species, and more hairy and usually more deeply sinuate. Flowering-stems copiously branched in large examples, usually without leaves, or with 1 or 2 small ones. Pericline oblong-campanulate in flower, with the phyllaries narrower, more acuminate, and more numerous than in *H. glabra*. Pales with long setaceous points. Anthodes usually much larger than in *H. glabra*. Florets deep yellow, numerous. Achenes large, strongly muricated, and with a long beak, in the central ones exceeding the length of

the achenes; the exterior ones with a beak usually less than their own length. Plant dull-green, with the leaves commonly hispid, and the stems glabrous towards the top.

A form with glabrous leaves has occurred in Sandown Bay, Isle of Wight.

Long-rooted Cat's-ear.

French, *Porcelle à longues Racines.* German, *Langwurzelliges Ferkelkraut.*

SUB-GENUS II.—ACHYROPHORUS. *Scop.*

Hairs of the pappus in one row, all plumose.

SPECIES III.—HYPOCHERIS MACULATA. *Linn.*

PLATE DCCXCI.

Billot, Fl. Gall. et Germ. Exsicc. No. 583.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCXCVI. Fig. 1.

Perennial. Leaves oblong-elliptical or oblanceolate-elliptical, repand or dentate or sinuate-dentate, hispid. Stems scape-like, solitary or few, stout, erect, simple or with 1 or 2 branches, not thickened upwards, very sparingly furnished with bracts (more often destitute of them) beneath the anthodes. Pericline globular in bud; phyllaries numerous, entire, linear-lanceolate, the outer ones hairy on the back and adpressed, the middle and inner ones woolly-pubescent on the margins, the latter much shorter than the florets. Achenes with elevated transverse lines, all beaked.

On chalky and limestone hills. Rare. The Lizard, Cornwall; Ormes Head, North Wales; Humphrey Head, Lancashire; Devil's Ditch and Gogmagog Hills and Hildersham, Cambridge; Suffolk.

England. Perennial. Late Summer and Autumn.

Leaves less divided than in the last species, generally spotted with dark-purple and usually all radical, or the stem with 1 or 2 small leaves. Anthodes 1 to 4, very large. Pericline hemispherical, campanulate in flower; the outer phyllaries with bristly hairs on the back. Florets dark-yellow. Achenes scarcely muricated, all rather shortly beaked, but the beaks of the exterior ones shorter than those of the central florets. Plant deep-green, hispid on the leaves, and sparingly so on the stem.

Spotted Cat's-ear.

French, *Porcelle Tachée.* German, *Gefleckter Hachelkopf.*

The spotted appearance of the leaves of this plant has given rise to the popular notion that they cure cutaneous eruptions.

GENUS XXXII.—LEONTODON. *Linn.*

Anthodes many-flowered. Pericline oblong-ovoid ; phyllaries numerous, irregularly imbricated in several rows, or in 2 series with the outer ones much shorter. Clinanth naked or slightly fibrillous. Achenes longitudinally ribbed and transversely striate or sub-muricated, attenuated or sometimes beaked at the apex. Pappus of the central achenes of denticulate hairs, the longer ones dilated at the base ; pappus of the achenes of the circumference sometimes very short and composed of scales, but usually similar to that of the central achenes.

Herbs, with the leaves in a radical rosette. Scapes simple or corymbosely branched. Anthodes rather large. Florets yellow, the exterior ones often green or reddish on the back.

The name of this genus of plants comes from the Greek words *λεων* (*leon*), lion, and *οδους* (*odous*), a tooth, its jagged leaves resembling the jaws of a lion.

SUB-GENUS I.—THRINCIA. *Roth.*

Achenes of the circumference with a pappus of denticulated scales, and no hairs ; those of the centre with the hairs of the pappus elongated, dilated at the base, and plumose, often with shorter filiform and scabrous hairs on the outside. Hairs of the leaves forked or simple.

SPECIES I.—LEONTODON HIRTUS. *Linn.*

PLATE DCCXCII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1694.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXV.

Thrinicia hirta, *Roth*. *Bab. Man. Brit. Bot.* ed. v. p. 194. *Hook. & Arn. Brit. Fl.* ed. viii. p. 210, et *Auct. Plur.*

Hedypnois hirtum, *Sm. Eng. Bot.* No. 555.

Rootstock generally premorse, more rarely terminating in a tap-root ; radical fibres slender. Leaves strapshaped-ob lanceolate or oblong-ob lanceolate, repand-dentate or sinuate-dentate, generally hispid with forked hairs. Scapes 1-flowered, sparingly hairy, without leaves or bracts. Anthodes drooping before expansion.

Phyllaries glabrous, or hairy on the keel. Achenes of the disk-florets fusiform, attenuated but scarcely beaked at the apex, longitudinally ribbed, with the ribs muricated, and crowned by a pappus of elongated plumose hairs; those of the circumference cylindrical, truncate at the apex, curved, faintly longitudinally striate, with transverse lines and crowned by a cup-like pappus of scarious scales.

On sandy and gravelly heaths, commons, and waste places. Common in England, more rare in Scotland, and not extending North of Fifeshire and the neighbourhood of Glasgow.

England, Scotland, Ireland. Biennial or perennial.
Summer and Autumn.

Leaves long, narrow, varying in the depth of their dentation, generally clothed with rather remote hairs, many of which have 2 or 3 small hooks at the apex. Scapes numerous in large specimens, decumbent at the base, then ascending or erect, sparingly hairy, especially towards the base, longer than the leaves, 2 inches to 1 foot high, slightly enlarged beneath the anthodes. Anthodes oblong-ovoid in bud. Inner phyllaries equal, glabrous or with a line of bristly hairs on the midrib, generally ciliated with woolly hairs at the apex; outer phyllaries much shorter, imbricated, in about 2 rows. Achenes $\frac{1}{5}$ inch long; the central ones, which have a plumose brownish-white pappus, chestnut-brown, beautifully muricated on the ribs, especially towards the apex; the outer ones pale-brown, very faintly longitudinally ribbed and indistinctly roughened with transverse lines, with a pappus of scales resembling the dilated bases of the hairs of the central achenes, deprived of their elongated slender portion. Plant yellowish-green.

Hairy Hawk-bit.

French, *Thrincie hérissée*. German, *Haariger Hundslattich*.

SUB-GENUS II.—APARGIA. Willd.

All the achenes with a pappus of elongated hairs. Hairs of the pappus in 2 series; the inner ones longer, dilated at the base, and plumose; the outer ones short, filiform, and only scabrous. Rootstock premorse. Anthodes drooping in bud. Hairs of the leaves forked or simple.

SPECIES II.—*LEONTODON HISPIDUS*. *Linn.*

PLATE DCCXCHII.

Billot, Fl. Gall. et Germ. Exsicc. No. 267.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tabs. MCCCCLXVIII. MCCCCLXIX.

L. hastilis, var. *a*, vulgaris, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 482.

L. proteiformis, *Vill.*, β vulgaris, *Gr. & Godr.* Fl. de Fr. Vol. II. p. 299.

Apargia hispida, *Willd.* *Bab. Man.* Brit. Bot. ed. v. p. 194. *Hook. & Arn.* Brit. Fl. ed. viii. p. 210.

Hedypnois hispidum, *Sm.* Eng. Bot. No. 554.

Rootstock branched, premorse. Leaves strapshaped-oblanccolate or linear-oblanccolate or oblong-oblanccolate, sinuate-dentate or runcinate-pinnatifid, hispid with forked hairs. Scapes 1-flowered, slightly thickened at the summit, densely hairy (at least towards the apex), without leaves or bracts, or with only 1 or 2 of the latter beneath the anthodes. Anthodes drooping before expansion. Phyllaries hispid on the back. Achenes all cylindric-fusiform, not beaked, longitudinally ribbed, with the ribs squamous-muricated. Pappus brownish-white, with the outer hairs not plumose.

In pastures and heaths, especially on calcareous and sandy soils. Rather common in England and the South of Scotland, but not occurring North of Forfar and the neighbourhood of Glasgow.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock thick, fleshy, shortly creeping, with many heads or short branches, each producing a tuft of leaves varying from 2 inches to 1 foot long, varying much in the depth of their toothing or incision. Scapes 1 or few from each separate tuft of leaves, and much exceeding them, 6 inches to 2 feet high. Pericline ovoid in bud; the inner phyllaries equal, the outer imbricated in several rows. Anthodes as large as those of the dandelion, bright-yellow. Achenes $\frac{1}{4}$ inch long, thickest about one-third above the base, pale-brown, with elevated scale-like transverse ridges. Plant pale-green, often hoary from the abundance of white hairs.

This plant is a sub-species of the *L. proteiformis* of Villars, the typical form of which is the *L. hastilis* of Linnaeus, which is nearly or perfectly glabrous; but though common on the Continent, this form has not been observed in Britain.

Rough Hawk-bit.

French, *Liondent hispide*. German, *Spießförmiger Löwenzahn*.

SUB-GENUS III.—OPORINIA. *Don.*

All the achenes with a pappus of elongated hairs. Hairs of the pappus in 1 row, all slightly dilated at the base, and plumose. Rootstock premorse. Anthodes erect in bud. Hairs of the leaves simple.

SPECIES III.—LEONTODON AUTUMNALIS. *Linn.*

PLATES DCCXCIV. DCCXCV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1510.*Reich*, Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLVI. Figs. 2, 3.*Apargia autumnalis*, *Willd.* *Bab. Man. Brit. Bot.* ed. v. p. 194. *Hook. & Arn. Brit. Fl.* ed. viii. p. 210.*Oporinia autumnalis*, *Don.* *Bromfield*, Fl. Vect. p. 281.

Rootstock premorse, simple or branched and many-headed. Leaves strapshaped-ob lanceolate or oblong-strapshaped or oblanceolate-linear, varying from deeply pinnatifid to repand-dentate, glabrous or hairy with simple hairs. Scapes branched, rarely 1-flowered, thickened and fistulous at the apex, with numerous small scale-like bracts beneath the anthodes. Anthodes erect before expansion. Phyllaries glabrous or woolly. Achenes all cylindrical, not beaked, longitudinally ribbed, with ribs faintly squamose-muricated. Pappus dirty-white, with all the hairs plumose, or rarely a few simple ones below the others.

Var. α , *genuinus*.

PLATE DCCXCIV.

Hedypnois autumnalis, *Sm.* Eng. Bot. No. 830.

Pericline and peduncles glabrous or sub-glabrous.

Var. β , *pratensis*. *Koch.*

PLATE DCCXCV.

Hedypnois Taraxici, *Sm.* Eng. Bot. No. 1109, non *Hieracium Taraxici*, *Linn.* Sp. Pl. p. 1125.

Pericline, peduncles and upper part of the scape thickly clothed with woolly hairs.

In meadows, pastures, and waste places. Very common, and universally distributed. Var. β in mountainous districts.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Leaves very variable both in breadth, shape, and depth of tooth-ing or incision, but generally with scarcely any tendency to become runcinate. Scapes generally decumbent at the base, then erect or ascending, longer than the leaves, 3 inches to 2 feet high, corym-bosely branched in large specimens, simple or with a single branch in small ones. Pericline oblong-turbinate in bud; phyllaries varying from glabrous to densely woolly, the hairs sometimes olive, some-times nearly black. Achenes about $\frac{1}{4}$ inch long, very little narrowed towards the tip, reddish-brown, slightly roughened with transverse ridges. Flowers bright-yellow, rather smaller than those of a dandelion.

This plant bears much resemblance to *Hypochaeris radicata*, but the leaves are narrower, more pointed and more flaccid, generally smoother, and in the broader forms more deeply divided. The phyl-laries are less regularly imbricated and more acute, and there are no membranous pales on the receptacle. The fruit is very different, being destitute of the long beak, with which that of *H. radicata* is furnished. The ribs are much smoother, the transverse lines longer and not elevated into sharp points. The pappus is single or nearly so, and the stem and peduncles are more slender.

Var. β , when growing in alpine situations, is generally mono-cephalous, has the wool on the pedicels and the pericline nearly black: in that state it presents considerable resemblance to some of the *Hieracia*, but when cultivated the stem branches. Every inter-mediate state between glabrous and hairy pericline and in the latter case between green and black wool may be met with.

Autumnal Hawk-bit.

French, *Liondent d'Automne*. German, *Herbst Löwenzahn*.

GENUS XXXIII.—PICRIS. *Linn.*

Anthodes many-flowered. Pericline oblong-cylindrical, atte-nuated towards the apex (sometimes strangulated under the pappus after flowering), of 2 series of phyllaries; those of the inner series equal, imbricated, those of the outer generally re-curved and irregular. Clinanth naked. Achenes prismatic-fusi-form, ribbed and transversely rugose. Pappus deciduous, of denticulated pure white silky hairs, united into a ring at the base, plumose, or the exterior ones simple; secondary hairs not interwoven.

Herbs, rough with hooked hairs, having branching leafy stems and undivided or pinnatifid leaves. *Anthodes* stalked. Florets yellow, the exterior ones often red on the back.

The name of this genus of plants comes from *πικρος* (*pikros*), bitter, on account of the bitter taste of the species.

SPECIES I.—*PICRIS HIERACIOIDES*. Linn.

PLATE DCCXCVI.

Billot, Fl. Gall. et Germ. Exsicc. No. 2871.*Reich*. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLXXV.

Biennial. Stem corymbosely branched, with the branches usually spreading. Radical leaves linear-oblongate; stem-leaves strapshaped; upper leaves lanceolate, generally semi-amplexicaul; all repand or sinuate-dentate, often undulated at the margins. Anthodes corymbose. Pericline not strangulated in fruit; phyllaries downy and ciliated, hispid with hooked hairs towards the base. Achenes fusiform-cylindrical, transversely striate, not beaked.

Var. *α*, *genuina*.

PLATE DCCXCVI.

P. hieracioides, *Jord.* *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 371.

Branches divaricate. Anthodes in an irregular corymb.

Var. *β*, *arvalis*.*P. arvalis*, *Jord.* *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 371.

Stem with the branches spreading-ascending. Anthodes in an umbellate corymb.

Borders of fields and waste places. Common in chalky districts, and sparingly distributed over the greater part of the South and East of England. Var. *β* I have seen from near Groby Pool and Market Bosworth, Leicestershire.

England, Ireland. Biennial or sub-perennial. Late Summer and Autumn.

Stem rough with bristly hairs hooked at the apex. Radical leaves variable in breadth, attenuated into an indistinct petiole; stem-leaves more attenuated towards the apex, sometimes broad towards the base, sometimes attenuated; all commonly undulated. Peduncles slightly thickened beneath the anthodes. Pericline oblong-ovoid in bud, conico-cylindrical after flowering; outer phyllaries spreading-recurved. Achenes reddish-brown marked with contiguous transverse interrupted blunt elevated lines, not beaked. Pappus deciduous, of silky plumose hairs.

Var. *β* is a more slender plant, with the branches less divaricate, the leaves narrower towards the base, and the main peduncles springing mostly from one point, scarcely thickened below the heads.

*Hawk-weed Ox-tongue.*French, *Pieride Epervière*. German, *Habichtskrautähnlicher Bitterich*.

GENUS XXXIV.—HELMINTHIA. *Juss.*

Anthodes many-flowered. Pericline oblong-ovoid, with 2 series of phyllaries; those of the inner series imbricated, those of the outer few, broader, often foliaceous, nearly as long as the inner. Climanth naked. Achenes elliptical-ovoid, compressed, transversely rugose, terminated by a slender beak about as long as the achene. Pappus deciduous, of pure-white slender silky plumose hairs; the secondary hairs not interwoven.

Scabrous almost prickly herbs, with dichotomously-branched stems, the exterior ones usually red on the back. Florets yellow.

The Greek words which give a name to this genus of plants are *ελμινθος* (*elminthos*), of a worm, and *θηκη* (*thekē*), a case, from a fancied resemblance in the seeds.

SPECIES I.—HELMINTHIA ECHIOIDES. *Gärtn.*

PLATE DCCXCVII.

Dillot, Fl. Gall. et Germ. Exsic. No. 47.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXXVIII.

Picris echioides, *Linn.* *Sm.* Eng. Bot. No. 972.

Biennial. Stem erect, hirsute. Radical and lower leaves oblong-oblanccolate or oblanceolate; upper ones lanceolate, amplexicaul; all with white warts and prickly-like bristles and hairs. Anthodes in an irregularly-dichotomous corymbose cyme. Pericline with the outer phyllaries 3 to 5 in number, ovate-acuminate, cordate at the base, bristly-spiny on the margins. Achenes transversely striated, terminated by a long slender deciduous beak.

In waste places, by roadsides, and in cultivated fields. Rather local, though pretty generally distributed over England. About Berwick-on-Tweed and Tynefield, near Dunbar, in Scotland, but perhaps introduced there.

England, Scotland (?), Ireland. Biennial or annual. Late Summer and Autumn.

Radical leaves lying flat on the ground in a rosette, bearing some resemblance to the young leaves of *Echium vulgare*, irregularly sprinkled with unequal white tubercles, from which stiff bristles or weak prickles spring. Stem irregularly dichotomously branched, rough with hooked hairs. Lower stem-leaves oblanceolate, and all except the lowest dilated and auricled at the base, the uppermost of all tapering from the base to the apex; all coarsely dentate or repand-dentate, and ciliated with stiff bristles. Outer phyllaries very large, nearly concealing the inner ones, but not quite

equal to them in length; inner phyllaries with the midrib bristly, excurrent from the back a little way below the apex. Achenes brick-red, abruptly acuminate at the apex, and produced into a beak longer than themselves, the greater part of which breaks off with the deciduous snow-white pappus.

Bristly Ox-tongue.

French, *Helminthie Vipérine*. German, *Natterkopffartiges Wurmkrout*.

When young, this plant forms an agreeable pot-herb; the juice is milky, and not too bitter in an early stage.

GENUS XXXV.—TRAGOPOGON. *Linn.*

Anthodes many-flowered. Pericline lanceolate-oblong, of 8 to 16 equal phyllaries in 1 series, united at the base. Clinanth naked. Achenes fusiform, sessile, the exterior ones muricated, all produced into a long slender beak. Pappus of all the florets of dirty-white plumose hairs, five of which are longer and naked at the apex; the secondary hairs interwoven.

Herbs, often smooth, with grass-like or leek-like leaves, having a white hollow midrib. Anthodes large, solitary, with yellow, purple, or lilac florets. Phyllaries reflexed after the fall of the achenes.

The derivation of the name of this genus of plants is from *τραγος* (*tragos*), a goat, and *πωγων* (*pogon*), a beard, which the down of the seed is said to resemble.

SPECIES I.—TRAGOPOGON PRATENSIS. *Linn.*

PLATES DCCXCVIII. DCCXCIX. DCCC.

Leaves linear, those of the stem dilated at the base and abruptly acuminate into a slender point towards the apex, glabrous. Peduncles scarcely thickened beneath the anthodes. Florets yellow. Achenes with the beak about as long as the achene, ribbed; those of the outer florets usually muricated on the ribs. Pappus of all the florets of plumose hairs.

Var. *α, genuinus.*

PLATE DCCXCVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 3427.

Reich, Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLXXXIX.

T. pratensis, *Fr.* *Deb.* Man. Brit. Bot. ed. v. p. 195. *Fries*, Nov. Fl. Suec. ed. ii. p. 240; *Sum.* Veg. Scand. p. 5.

Florets about equal in length to the phyllaries.

Var. β , *minor*.

PLATE DCCXCIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1513.*Reich.* Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXC. Fig. 2.*T. minor*, *Fr.* *Bot. Man. Brit. Bot.* ed. v. p. 195. *Fries*, Nov. Fl. Suec. ed. ii. p. 241 ;
Sum. Veg. Scand. p. 5.

Florets about half the length of the phyllaries. Stem usually taller and more slender than in var. α .

Var. γ , *grandiflorus*.

PLATE DCCC.

Billot, Fl. Gall. et Germ. Exsicc. No. 1514.*Reich.* Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXC. Fig. 1 (?).*T. pratensis*, *Sm.* Eng. Bot. No. 434.*T. orientalis*, *Linn.* (?) et *Auct.* (?).

Florets considerably longer than the phyllaries.

In meadows, pastures, and waste places. Common, and generally distributed throughout England ; more rare in Scotland, where it has been found as far North as the counties of Aberdeen and Sutherland. Var. β is the most frequent form, especially in Scotland. Var. γ is apparently rare : I have found it at Sydenham, Kent ; on the chalk hills near Betchworth, Surrey ; and have seen it from near Cobham, Kent.

England, Scotland, Ireland. Biennial. Summer
and Autumn.

Root a long tapering tap-root with white milky juice. Radical leaves resembling those of garlic or a narrow-leaved leek, dilated and somewhat sheathing at the base, keeled beneath, channelled above, with midrib hollow and white ; stem-leaves much dilated and amplexicaul at the base, then suddenly acuminate into linear points. Stem branched, the upper portion bare of leaves for a considerable distance below the fruiting anthodes, immediately beneath which they are suddenly and very slightly dilated. Pericline lanceolate-oblong in bud, lanceolate-ovoid after flowering ; phyllaries all equal, 8, in 2 rows, narrowly-lanceolate, flat. Florets very variable in length, yellow, sometimes streaked with brown. Anthodes $1\frac{1}{4}$ to $1\frac{3}{4}$ inch long in fruit. Achenes olive-yellow, the central ones generally smooth, the outer ones muricated with small elevated scales ; but sometimes they are all nearly smooth, and sometimes they are all more or less muricated ; the beak also varies in length, sometimes a little shorter, and sometimes a little longer than the achene, with a hairy ring at the summit. Pappus plumose

with delicate interwoven hairs, some of the main hairs longer than the others, and not plumose at the tips. Plant pale-green, slightly glaucous, glabrous except a little very short wool at the base of the phyllaries.

It is impossible to draw any line between the forms with florets of different length; but I hesitate to call the large-flowered variety *T. orientalis*, because Koch describes the marginal achenes of his *T. pratensis* and *T. minor* as being tuberculate-scabrous and equalling the beak in length, while his *T. orientalis* has the "marginal achenes squamose-muricated with cartilaginous scales" and nearly twice as long as their beak. Now I have not seen the fruit either of the true *T. orientalis* or of the British form with elongated florets; and Professor Babington states it is in his specimen "slightly furrowed, and quite smooth." The flowers of the true *T. orientalis* remain bright-yellow when dried, but in the British plant they fade.

Yellow Goat's-beard.

French, *Salsifis des Près.* German, *Wiesen Haferwurz.*

The roots of this plant are quite worthy of cultivation as an esculent, though they have been greatly superseded by those of another species, *T. porrifolius*. They resemble asparagus, and are nearly as nutritious. The flowers of both species have the singular habit of closing invariably at midday, so that they have acquired the village name of "Jack-go-to-bed-at-noon," and are perhaps more to be depended on than any other of the plants composing that fanciful but pretty conception, a dial of flowers.

Cowley tells us,—

"Then the goat's-beard, which each morn abroad does peep,
But shuts its flowers at noon, and goes to sleep."

Mr. Grindon, in his charming work on British and Garden Botany, says,—“The lark, when it comes to reveillé the early botanist, is not sooner with its sweet song than the petals are to expand; and by six o'clock, when most other flowers are still folded, this one has opened the full disk of its delicate bloom: by ten or twelve, though the sun be hot and bright, the blossoms begin to close, and in the afternoon the plant is discoverable only by its leaves. In very cloudy weather they remain open a little longer:—

‘Then to lay one down
Upon a primrose bank, where violet flowers
Smell sweetly, and the mead’s in bloomy prime,
Till Flora’s clock, the goat’s-beard, mark the hours,
And closing says, ‘Arise, ’tis dinner-time;’
Then dine on pyes and cauliflower-heads,
And roam away the afternoon in tulip-beds.’”

SPECIES II.—*TRAGOPOGON PORRIFOLIUS.* *Linn.*

PLATE DCCCI.

Leaves linear, those of the stem slightly dilated at the base, and tapering gradually towards the apex, glabrous. Peduncles

greatly and gradually thickened upwards beneath the anthodes. Florets purplish-lilac. Achenes beaked, with the beak about as long as the achene, ribbed, the outer ones strongly squamous-muricated. Pappus of all the florets with plumose hairs.

Var. α , *sativus*.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCLXXXVII. Figs. 2, 3
Sm. Eng. Bot. No. 638.

Florets about as long as the phyllaries.

Var. β , *parviflorus*.

Florets about half the length of the phyllaries.

In meadows and marshy places. Rather rare, and probably introduced in many of its stations, though possibly it is native in the South of England. Most of the specimens which have come under my notice belong to var. α ; var. β I have seen from Tintern, Monmouthshire, and the specimen figured in "English Botany" which represents this was gathered near St. Vincent's Rocks, Bristol.

England. Biennial. Summer.

This plant has much of the general habit of *T. pratensis*, but is usually much larger, sometimes 2 or 3 feet high; the stem-leaves taper more gradually; but the most striking difference is the thickening of the peduncles beneath the anthodes, which are $1\frac{1}{2}$ to 2 inches long in fruit. Florets variable in length, as in *T. pratensis*, apparently darker purple in var. β than in var. α , which is that which is generally cultivated. Fruit with the beak a little longer than the achene, the latter with the scales much more prominent and more decidedly disposed in longitudinal lines than in *T. pratensis*. Plant glabrous, and slightly glaucous.

Salsify.

French, *Salsifis à Feuilles de Poircau*. German, *Lauchblüttrige Haferwurzel*.

This species possesses all the properties of the former one, and by many is supposed to be a more agreeable vegetable. It is eaten as a salad, and is also cultivated in gardens for boiling or stewing. The leaves, as the trivial name imports, resemble those of a leek, and its purple flower is surrounded by an involucre which closes in the morning, as in the yellow Goat's-beard.

TRIBE III.—CREPOIDEÆ.

Pappus composed of filiform hairs, which are not plumose, nor dilated at the base.

GENUS XXXVI.—**TARAXACUM.** *Juss.*

Anthodes many-flowered. Pericline oblong, of numerous phyllaries in 2 series ; those of the inner series equal, in 1 row, those of the outer in several rows, much shorter and frequently spreading or recurved. Clinanth naked. Achenes cylindrical-oblong, very slightly compressed, muricated towards the apex, terminated by a slender beak, which is surrounded by short spines at the base. Pappus of white filiform simple hairs.

Herbs, with the leaves all radical. Scapes almost always 1-flowered, fistulous. Anthodes large, yellow ; the outer florets often olive or red on the back. Phyllaries reflexed after the fall of the achenes.

The name of this genus of plants comes from *ταρασσω* (*tarasso*), I change, from its supposed effects on the blood.

SPECIES I.—**TARAXACUM OFFICINALE.** *Wiggers.*

PLATES DCCCII. DCCCIII. DCCCIV.

Leontodon Taraxacum, *Linn. Bab. Man. Brit. Bot. ed. v. p. 196. Hook. & Arn. Brit. Fl. ed. viii. p. 216.*

Scapes produced with the leaves, 1-flowered. Beak as long as or longer than the achene.

Var. *α*, *genuinum.* *Koch.*

PLATE DCCCII.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCIV.

T. Dens-leonis, *Desf. D. C. Prod. Vol. VII. p. 145.*

T. officinale, *Gr. & Godr. Fl. de Fr. Vol. II. p. 316.*

Leontodon Taraxacum, *Linn. Sm. Eng. Bot. No. 510.*

Leaves bright-green, runcinate-pinnatifid, with the segments broadly-triangular. Inner phyllaries simple at the apex ; outer ones strapshaped, recurved. Achenes olive or dull-yellow, slightly muricated at the apex.

Var. *β*, *erythrospermum.*

PLATE DCCCIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1907.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCV. Fig. 1.

T. erythrospermum, *Andrez. D. C. Prod. Vol. VII. p. 147. Gr. & Godr. Fl. de Fr. Vol. II. p. 316.*

T. officinale, var. *glaucescens*, *Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 492. Reich. fl. l. c. p. 25.*

Leaves dull-green, often slightly glaucous, very deeply pinnatifid, usually runcinate, with the lobes triangular-strapshaped, rather distant. Inner phyllaries gibbous and mostly with a flat strapshaped appendage a little below the apex; the outer ones lanceolate, spreading. Achenes dark-red, spinulose-muricated at the apex.

Var. γ , *lævigatum*.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCV. Fig. 3.

T. lævigatum, D. C. Prod. Vol. VII. p. 146. Gr. & Godr. Fl. de Fr. Vol. II. p. 316.

T. officinale, var. Taraxacoides, Koch, Syn. Fl. Germ. et Helv. ed. i. p. 492. Reich. fil. l. c. p. 25.

Leaves dull-green, deeply pinnatifid, with triangular-strap-shaped distant lobes. Inner phyllaries gibbous and mostly with a flat strapshaped appendage a little below the apex; outer phyllaries ovate-lanceolate, loosely adpressed. Achenes olive, spinulose-muricated at the apex.

Var. δ , *palustre*.

PLATE DCCCIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1252.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCVI.

T. palustre, D. C. Prod. Vol. VII. p. 148. Gr. & Godr. Fl. de Fr. Vol. II. p. 317.

T. officinale, var. lividum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 492.

Leontodon palustre, Sm. Eng. Bot. No. 553.

Leaves dull-green sinuate-dentate, pinnatifid or runcinate-pinnatifid with triangular broad approximate lobes. Inner phyllaries simple at the apex; outer ones ovate, adpressed or spreading. Achenes olive or dull-yellow, spinous-muricated at the apex.

In meadows, pastures, fields, &c. Very common, and universally distributed. Var. β on chalk-downs, and in sandy places; var. γ in sandy places; var. δ in moist situations, and apparently rare in the South of England.

England, Scotland, Ireland. Perennial. Spring to Autumn.

β , early Summer; δ , late Summer and Autumn.

Plant with a long tap-root passing insensibly into a simple or many-headed rhizome. Leaves in var. α oblanceolate, the earliest ones both in this and the other varieties generally undivided, and merely toothed, but the later ones are generally pinnatifid with broadly triangular lobes pointing backwards, toothed on the side towards the apex of the leaf, entire on that towards the base, and toothed and entire on the space between the teeth. Scapes leafless, numerous, fragile, hollow, decumbent, ascending or erect, 2 to 15

inches high, terminated by a single large anthode. Phyllaries glabrous, the inner ones much longer and slightly thickened, but not split at the apex. Florets bright-yellow, longer than the phyllaries, the outer ones generally olive on the back. Achenes olive or dull yellow, ribbed, rough with sharp tubercles on the apex beneath the beak, which is longer than the achene and very slender. Pappus of delicate white simple hairs. Plant glabrous or sub-glabrous, the crown of the rootstock and scapes sometimes woolly.

Var. β is a smaller plant, with the leaves much more deeply divided, the later ones pinnatipartite, with the segments acuminate a little above the base and their points somewhat strapshaped, with teeth on the side next the apex and between the lobes; the leaves are generally more glaucous than in the common form, but sometimes scarcely differ in colour. Scapes 1 to 9 inches long. Anthodes smaller; the outer phyllaries broader, and more tapering towards the apex, not reflexed, sometimes spreading, sometimes loosely adpressed; the inner ones are usually thickened, and have a short lobe near the apex so as to have double ends. The fruit is of a bright dark brick-red, rather smaller and more spinous at the top than in the common form. Plant glabrous or sub-glabrous.

Var. γ scarcely deserves to be distinguished from β , from which it differs only in the colour of the achenes, a character of little importance. Plant glabrous.

Var. δ has the leaves narrower and less divided than in the other forms, often merely dentate. The outer phyllaries are much broader at the base, and more adpressed than in the others; it also seems to be a more northern form. Plant glabrous.

Were it not that Koch, in the "Flora" for 1834, No. 6, p. 49, states that from the seeds of *T. palustre* he obtained the greater number of the forms which have been distinguished as species, I should have been disposed to consider that we have three sub-species in Britain,—1st, the common form; 2nd, the form with finely-divided leaves and bi-lobed inner phyllaries (*T. erythrospermum* and *T. lævigatum*); and 3rd, the *T. palustre* of De Candolle, including *T. udum* (Jord.).

Common Dandelion.

French, *Pissenlit Officinal*. German, *Gebräuchliche Kichblume*.

This common wayside plant is known to every one, and were it not so familiar, would probably be thought attractive, from the golden-yellow colour of its flowers, and the globes of white-plumed seeds which succeed them. Who has not, in the days of their childhood, delighted in blowing these silvery feathers into the air, and trying "what's o'clock" by their behaviour:—

"Dandelion, with globe of down,
The schoolboy's clock in every town,
While the truant puffs amain
To conjure lost hours back again."

The whole plant contains a milky juice, possessed of diuretic, tonic, and stomachic qualities. It has long been employed in chronic disorders of the digestive organs, and especially of the liver. It is still retained in the British Pharmacopœia, and is used largely by some practitioners in the form of an extract. We know that some good folks, who do not believe in the mysterious processes of the chemist's laboratory, prefer making a decoction of the roots and leaves for themselves, and thus ridding their own and their neighbours' gardens of a troublesome weed.

In Holland, the extract of Dandelion is a common remedy for the intermittent fevers and agues so prevalent in that marshy country. The roots are taken up about Midsummer, and those only of some years' growth are esteemed valuable, as the active principle they contain increases with age: this principle is known to the chemists as an alkaloid called *Taraxacin*. In Germany the roots are cut into pieces, roasted, and used as a substitute for coffee. In this country Dandelion coffee is sometimes used for medicinal purposes, but it is generally mixed with true coffee to give it a better flavour. In early spring, the young leaves blanched are much used on the Continent as an ingredient in salads. They are very wholesome, and sheep and other animals that feed on them are said to be benefited thereby.

Dr. Withering tells us that the diuretic properties of this plant are very certain, and well known to all country people. When a swarm of locusts had destroyed the harvest in the island of Minorca, many of the inhabitants subsisted on this plant. The expressed juice has been given to the quantity of four ounces three or four times a day; and Boerhaave had a great opinion of its utility in visceral obstructions. The roots contain gum and sugar, and a large quantity of inulin, a substance analogous to starch. A kind of beer is obtained by the fermentation of the plant in Canada, where it is nearly as common as it is here. The old name of the plant, *Leontodon*, was but another form of the common English name Dandelion, which is a corruption of the French *Dent de Lion*, derived from the tooth-like segments of the leaves.

GENUS XXXVII.—LACTUCA. *Linn.*

Anthodes few-flowered. Pericline cylindrical, of rather few phyllaries, imbricated in 2 to 4 series, those of the outermost series generally much shorter. Clinanth naked. Achenes much compressed, with 1 or more ribs on the face, suddenly narrowed into a slender beak without spines at the base and surmounted by a small disk. Pappus of white capillary denticulate simple hairs.

Herbs, with leafy stems and numerous small anthodes, generally panicled. Florets yellow, blue, or purple. Juice milky.

The name of this genus of plants comes from *lac*, *lactis*, milk; the whole plant being lactescent.

SPECIES I.—LACTUCA VIROSA. *Linn.*

PLATE DCCCV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1253.

Reich, Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXXII.

Stem scabrous with small prickles. Radical leaves obovate, undivided; lower stem-leaves spreading horizontally, obovate, blunt; the upper ones oblong; all (except the lowest) amplexicaul, with blunt or sub-acute adpressed auricles (not decurrent), undivided or occasionally runcinate-pinnatifid, sub-spinous-denticulate, spiny on the midrib beneath. Panicle with the branches rather elongate, spreading horizontally. Achenes purplish-black, elliptical-ovoid, bordered all round, glabrous at the summit; beak white, as long as the achene.

In waste places, banks, and cliffs. Rather rare, but pretty generally distributed in England, except in the South-western counties; rare in Scotland, where it occurs about Stirling Castle, and at Kinnoul and Dunkeld, Perthshire.

England, Scotland. Biennial or annual? Late Summer and Autumn.

Radical leaves 4 inches to 1 foot long, narrowed into an indistinct winged petiole at the base. Stem 18 inches to 6 feet high, simple below, branched above, with the branches comparatively short, and spreading horizontally so as to form a long lax oblong panicle. Lower stem-leaves narrowed at the base, blunt; upper ones scarcely narrowed towards the base, blunt or sub-acute; auricles bent down parallel to the stem. Anthodes $\frac{1}{2}$ to $\frac{3}{4}$ inch long, shortly stalked, ascending vertically so as to be all on the upper side of the branches of the panicle. Phyllaries frequently tinged with dull-red. Florets pale-yellow. Achenes $\frac{1}{2}$ inch long, exclusive of the slender white beak, with a broad beaded margin all round, and slender rough ribs on each face; beak enlarged into a disk at the top. Pappus silky-white. Plant glabrous, light glaucous-green, particularly the root-leaves; stem often spotted with purple.

Strong-scented Lettuce.

French, *Laitue Vireuse*. German, *Gift Lattich*.

The Wild Lettuce contains all the active properties of the genus. Its juice smells like opium, and is milky, acrid, and bitter. It is the *θριδάξ αγρία* (*thridax agria*) of Dioscorides. Before the flowering-stem begins to show itself, it is well known that the Garden Lettuce contains a pleasant sweet watery juice, and in this condition it is used throughout Europe for salads. But in both varieties, no sooner does the flowering-stem rise above the early leaves, than the juice grows milky, very bitter, and of a strong rank peculiar odour; and these qualities go on increasing until the flowers blow, which happens in the Wild Lettuce in the months of July or August, and in the Garden Lettuce in August or September. So long as the juice remains clear, it contains chiefly sugar, mucilage, and albumen; but when it becomes milky, it also contains resin, a substance like caoutchouc, and a bitter crystalline active principle. A considerable number of preparations have at various times been obtained from the Garden Lettuce, and are sold in the shops under different names. There are lettuce lozenges

supposed to be good for coughs, and at one time the colleges recognized under the name of *Extractum Lactuce*, a mere extract of the juice obtained by beating the lettuce-leaves with a little water and evaporating the expressed juice. This was of very little potency. Another preparation existed in the Paris Codex made from the expressed juice of the stems alone; but Dr. Christison tells us, in his "Dispensatory," that all these preparations are far inferior to the lactucarium of Coxe and Duncan, as improved by the processes of Dr. Young and Dr. Probart. This is an inspissated exudation, obtained by cutting across the stem not long before the flowers begin to blow, scraping off the milky fluid that issues, cutting off a fresh slice as often as the surface ceases to yield juice, and allowing the collected produce to dry spontaneously. Dr. Christison thinks that the London College was wrong in confining itself to the Garden Lettuce for the preparation of lactucarium, and states that *Lactuca virosa* yields this substance in much larger quantity and of superior quality. We find, however, on referring to the British Pharmacopœia lately published, that the preparation no longer exists as an authorized medicine in any form. The idea that the Wild Lettuce is more narcotic and dangerous in its qualities than the Garden Lettuce is without foundation, and the results obtained by competent chemists confirm this statement; the fact being that in the Wild Lettuce a much larger quantity of lactucarium exists than in the garden plant; both, however, being identical in action. Lactucarium, as prepared from the Garden Lettuce, is commonly sold in roundish compact and rather hard masses, weighing several ounces, of a wood-brown colour, of a strong peculiar odour, like that of opium, and of a disagreeable bitter somewhat acrid taste; that of the Wild Lettuce is sold in pieces of a smaller size, rough and irregular, wood-brown in colour, with an ash-grey inflorescence, so friable as to be easily crushed between the finger and thumb; reddish-brown in powder, and of a more acrid and bitter taste than the former kind. By the smell only it may be mistaken for opium. It is but little soluble in water, and after long boiling forms a brown turbid solution, which gives a green tint with sesquichloride of iron. It therefore contains no meconic acid. Dr. Taylor says that, on examining a good specimen, he found no traces of morphia. The investigations hitherto made in the actions and uses of lactucarium are not precise and satisfactory. It appears, however, to be a narcotic poison to the lower animals in moderate doses, for 10 or 20 grains are sufficient to cause sleep in dogs, and the watery solution of 20 or 30 grains occasions coma and death if injected into a vein. The effects of medicinal doses on man have been variously reported. Coxe thought it a stimulant of the circulation; François, on the contrary, found it to retard and weaken the pulse, and to lessen animal heat. Caventou observed it to occasion placid sleep or calm rest, without influencing any other function but those of external relation, or causing any disagreeable subsequent effect; and Ganzel witnessed the same results from doses varying between 10 and 60 grains. Dr. Christison considers it applicable in special diseases whenever a calvative anodyne or hypnotic is desired, and in some cases preferable to opium. The high price of the drug, and its very uncertain quality, may have been the reasons which produced its erasure from the list of medicines in the late Pharmacopœia. The ancients were acquainted with the effects and virtues of the Lettuce, which seems so have been the *Θυγάξ* (*thridax*) of the Greek physicians. It is fabled that after the death of Adonis, Venus, inconsolable, sought sweet oblivion by reclining on a bed of Lettuce, probably a figurative allusion to its anodyne properties.

"And now let Lettuce with its healthful sleep
Make haste."

SPECIES II.—*LACTUCA SCARIOLOA*. *Linn.*

PLATE DCCCVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCXXI. Figs. 1, 2.

Stem slightly scabrous with small prickles at the base, or nearly smooth. Radical leaves oblong, sinuate-pinnatifid; lower stem-leaves ascending, oblong, runcinate-pinnatifid, sub-acute; the upper ones usually undivided; all (except the lowest) sagittate-amplexicaul, with acute spreading auricles (not decurrent), spinous-denticulate on the margins, spiny on the midrib beneath. Panicle with the branches rather elongate, ascending. Achenes greyish-olive, elliptical-ovoid, narrowly bordered, scabrous at the top; beak white, as long as the achene.

In waste places. Rare. Plentiful near Southend, Essex; sparingly about Plumstead, Kent; and I have specimens from near Longden, Worcestershire, collected by Mr. T. Westcombe. It occurs also in Sussex, Surrey, Middlesex, and Cambridgeshire; but I have not seen specimens from these counties.

England. Biennial or annual. Late Summer and Autumn.

This plant bears some resemblance to *L. virosa*, which is combined with it by Mr. Bentham: it is, however, much more nearly allied to *L. saligna* than to the preceding species. The stem is usually shorter than that of *L. virosa*, rarely exceeding 3 feet in height, much less prickly, and that only towards the base, the leaves and branches ascending in an angle of about forty-five degrees; the segments of the leaves are longer, more acute, and more curved backwards than in the pinnatifid forms of *L. virosa*; the auricles are more acute, and not bent round and applied to the stem, as is the case (at least in the lower and intermediate leaves) in that species; the anthodes are smaller; the achenes narrower, more attenuated below, less compressed, and with narrower margins, and their colour, instead of being nearly black, is of an olive-grey; the plant is of a deeper green, and less glaucous.

In *L. Scariola* a comparatively small number of seeds germinate in autumn, the greater number not till the succeeding spring. This is the case at Southend, where *L. virosa* appears to be invariably biennial, *L. Scariola* very partially so, and *L. saligna* truly annual. Of course, in warmer localities the two latter may be more frequently biennial, and in colder ones *L. virosa* may become annual.

Prickly Lettuce.

French, *Laitue Sauvage*. German, *Wilder Lattich*.

This plant is supposed by some botanists to be the origin of the cultivated Lettuce of the gardens. Its properties are much the same as those of *L. virosa*. The Garden Lettuce was introduced into England about the middle of the sixteenth century; it is not certainly known from what country, but De Candolle thinks from India. The variety first cultivated appears from its name to have come from an island of the Greek Archipelago; it is still known as the Cos Lettuce, and is cultivated extensively for domestic use. Lettuces are generally raised from seed, and are planted out after they have attained a sufficient size, the leaves being tied up with bass to bleach the internal ones, by which means they are rendered more juicy and less bitter to the taste. The history of our familiar plants would be far from complete were we to exclude, as some of our critics suggest, the quaint and often curious notions entertained by the early botanists as to their uses and properties. We maintain that it is interesting, if not instructive, to know that two hundred and fifty years ago it was thought by old Gerarde, a much-esteemed and learned "Master in Chirurgie," that "Lettuce maketh a pleasant sallad, being eaten raw with vineger, oile, and a little salt; but if it be boiled, it is sooner digested and nourisheth more." He goes on to say that "it is served in these daies, and in these countries in the beginning of supper, and eaten first before any other meat, which also Martiall testifieth to be done in his time, marvelling why some did use it for a service at the end of supper, in these verses—being translated:—

‘Tell me why Lettuce, which our grandsires last did eate,
Is now of late become to be the first of meate.’

Notwithstanding it may now and then be eaten at both those times, to the health of the body; for being taken before meat, it doth many times stir up appetite; and eaten after supper it keepeth away drunkenness, which commeth by the wine; and that is by reason that it staieth the vapours from rising up into the head. Pliny tells us that "Lettuce on being outwardly applied mitigateth all inflammations; it is good for burnings and scaldings, if it be laid thereon with salt before the blisters do appeare."

SPECIES III.—*LACTUCA SALIGNA*. Linn.

PLATE DCCCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1700.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXX. Fig. 1.

Stem glabrous, rarely with a few scabrous points in the lower portion. Radical leaves oblong- or elliptical-strapshaped, entire, or sinuate-pinnatifid; stem-leaves erect, strapshaped-elliptical, entire, or rarely ascending and runcinate-pinnatifid, acute; all (except the lowest) hastate-amplexicaul with acute divaricate auricles (not decurrent), smooth on the margins and midrib, or in the pinnatifid forms sometimes with a few prickles on the under side of the midrib. Panicle sub-spicate, with the branches very short, erect. Achenes greyish-olive, elliptical-ovoid, narrowly bordered, glabrous at the summit; beak white, as long as the achene.

In waste places. Rather rare, and more partial to the sea-coast than the preceding species, with which, in other respects, its distribution coincides. The pinnatifid-leaved form in the marshes about Plumstead Butts.

England. Annual or biennial. Late Summer
and Autumn.

This plant bears much resemblance (especially in the larger pinnatifid-leaved forms) to *L. Scariola*; it has, however, a greater tendency to produce numerous branches at the base of the main stem. The leaves, even when runcinate, have the segments further apart and narrower; the auricles are more diverging; the margins and midribs of the leaves and the stems smooth, rarely with a few bristles or prickles; the panicle has extremely short branches, and the anthodes have shorter stalks; the fruit is similar, but smooth (not scabrous) towards the top, and the margin is scarcely broader than the ribs upon the face.

The form with pinnatifid leaves I have gathered at Plumstead Marshes, and have seen also from Whitstable in Kent. It is apparently the *L. saligna* β *runcinata* (Gr. & Godr. Fl. de Fr. Vol. II. p. 319), where it is suggested that it is possibly a hybrid between *L. saligna* and *L. Scariola*. It seems, however, to be merely a luxuriant form of the former.

Least Lettuce.

French, *Laitue Effilée*. German, *Weiden-blättriger Lattich*.

SPECIES IV.—*LACTUCA MURALIS*. *Fresen.*

PLATE DCCCVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 407.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXVII.

Prenanthes muralis, *Linn.* *Sm.* Eng. Bot. No. 457.

Mycelis muralis, *Reich.* Fl. Excurs. p. 272.

Phoenixopus muralis, *Koch*, Syn. Fl. Germ. et Helv. ed. i. p. 430.

Cicerbita muralis, *Wallr.* Sched. Crit. p. 436.

Stem smooth. Leaves lyrate-pinnatifid, sub-runcinate, with the lobes angular, not spiny on the margins or midrib; stem-leaves (except the lowest) amplexicaul, with acute or blunt auricles. Panicle very lax, corymbose at the top, with slender divaricate branches. Achenes purplish-black, scarcely bordered; beak white, about one-fourth the length of the achene.

On rocks, old walls, and shady places in woods. Rather rare but pretty generally distributed in England. It has also been

found at Main, near Elgin, but no doubt not native in that locality.

England, [Scotland,] Ireland. Annual or biennial ?
Summer and early Autumn.

Stem 9 inches to 3 feet high, slender. Lower leaves on long winged petioles, those on the stem with the petioles shorter and more dilated at the base ; radical and lower stem-leaves very deeply pinnatifid, with the segments remote and the rachis entire or toothed between the segments ; segments sub-rhomboidal or -hastate, the terminal one much larger than the others and hastately 3-lobed ; upper leaves small, remote, with a hastate point. Panicle short, with the branches and pedicels divaricate, the latter very slender. Pericline very slender, cylindrical ; the inner phyllaries nearly equal, the outer ones few, and much shorter. Florets few, pale-yellow. Plant pale-green ; the leaves glaucous beneath, flaccid, glabrous.

Ivy-leaved Lettuce.

French, *Laitue des Murs*. German, *Mauer Lattich*.

GENUS XXXVIII.—MULGEDIUM.* *Cass.*

Anthodes many-flowered. Pericline oblong, of numerous phyllaries, imbricated in several series, the outer ones much shorter than the others. Clinanth naked. Achenes prismatic, more or less compressed, slightly narrowed towards the apex, but not distinctly beaked, terminated by an enlarged cup-shaped ciliated disk. Pappus of dirty-white simple filiform hairs.

Herbs, with the lower leaves lyrate- and runcinate-pinnatifid or -pinnatifid or undivided. Anthodes racemose or paniced, rather large. Florets pale-blue.

The name of this genus of plants is derived from *mulgère*, to milk, meaning a milky plant.

SPECIES I.—MULGEDIUM ALPINUM. *Less.*

PLATE DCCCIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 2104.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXV.

* A genus reunited with *Sonchus* by Mr. Bentham ; but it appears to me that it is really more nearly allied to *Lactuca*, both in structure and habit : indeed, *M. Plumieri* is placed in the genus *Lactuca* by Professor Grenier, in the "Flore de France," and *M. alpinum* only differs from the *Lactuce* by its less compressed achenes, less attenuated towards the apex, and not beaked below the enlarged disk from which the pappus springs.

Sonchus alpinus, Linn. Benth. Handbook Brit. Bot. p. 326.

Sonchus cæruleus, Camer. Sm. Eng. Bot. No. 2425.

Cicerbitus alpina, Wallr. Sched. Crit. p. 434.

Leaves glabrous, the lower ones lyrate- and runcinate-pinnatifid, with a large deltoid-acuminate terminal lobe; uppermost leaves lanceolate or strapshaped-lanceolate, undivided. Anthodes racemose or in a racemose panicle. Rachis and pedicels with gland-tipped hairs, the latter with long bracts at the base. Pericline oblong-cylindrical, sparingly glandular-hairy. Achenes cylindrical - prismatic, slightly attenuated towards the apex, scarcely at all compressed.

On moist places on alpine rocks. Very rare. On Lochnagar, Aberdeenshire; Glen Callater, Glen Isla, and Glen Dole, Clova, Forfarshire.

Scotland. Perennial. Autumn.

Stem thick, succulent, hollow, furrowed, 18 inches to 4 feet high, simple up to the inflorescence. Lower leaves large, attenuated into winged petioles, which are dilated at the base and amplexicaul, with rather blunt auricles, the winged portion usually giving off a few pairs of segments much smaller than the terminal one; all the segments dentate or denticulate; upper leaves somewhat rhomboidal, elliptical-amplexicaul; uppermost ones very narrow, passing gradually into the long slender bracts of the inflorescence. Anthodes $\frac{3}{4}$ to 1 inch across, pale-blue. Inner phyllaries nearly equal, generally purplish; outer ones few, unequal; all with a few jointed gland-tipped hairs down the middle. Pappus of rather coarse dirty-white hairs. Plant light-green, the leaves and lower part of the stem glabrous.

Blue Sow-thistle.

French, *Laitron des Alpes*. German, *Gebirges Milchlattich*.

GENUS XXXIX.—SONCHUS. Linn.

Anthodes many-flowered. Pericline oblong-ovoid, of numerous phyllaries, imbricated in several series, the outer ones much shorter. Clinanth naked. Achenes compressed or sub-compressed, ribbed, not terminated by a beak or cup-shaped disk. Pappus of white slender capillary hairs.

Herbs, rarely soft wooded shrubs, with leafy stems and irregularly-corymbose rather large anthodes. Florets yellow.

According to Theophrastus, the name of this genus of plants comes from *σωος* (*soos*), safe, and *εχειν* (*echein*), to have, from its yielding a salubrious juice ; but to which species this applies is not clear.

SPECIES I.—*SONCHUS OLERACEUS*. *Linn.*

PLATE DCCCX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1911.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCX. Fig. 1.

S. oleraceus, α & β *lævis*, *Linn.* Sp. Plant. p. 1117.

Annual, with radical leaves. Stem branched. Leaves smooth, runcinate-pinnatifid or obovate, nearly flat, dentate, amplexicaul with spreading acute auricles. Anthodes in an irregular umbel. Phyllaries glabrous. Achenes compressed, longitudinally ribbed, and transversely rugose.

Cultivated ground, roadsides, and waste places. Very common, and generally distributed.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem 1 to 3 feet high. Leaves usually runcinate- and lyrate-pinnatifid, but varying much in the depth of their divisions, dentate but scarcely spinous at the margins ; auricles of the leaves in the middle of the stem acute and spreading, the uppermost ones often blunt and adpressed. Anthodes $\frac{3}{4}$ to 1 inch across, pale-yellow, in a sub-umbellate corymb. Pericline oblong before flowering, ovate-conical, abruptly acuminate from near the middle when in fruit. Achenes light-brown, distinctly transversely rugose. Leaves rather shining, bright-green, very slightly glaucous above, more so beneath. Plant glabrous or nearly so, rarely with jointed glandular hairs on the under side of the leaves and peduncles ; pedicels often cottony ; phyllaries rarely with a few glandular hairs.

Smooth Sow-thistle.

French, *Laitron des Lieux cultivés*. German, *Kohlartige Sandistel*.

The Sow-thistle is a well-known weed in every field and garden. Its hollow thick stems are full of a milky juice, which renders it a very acceptable food to most animals—pigs, sheep, and rabbits are particularly fond of it. It has also been used as an article of diet by men from a very early date. It is recorded by Pliny that Iliacate regaled Theseus, before his encounter with the bull of Marathon, upon a dish of Sow-thistles. The ancients considered them very wholesome and strengthening, and administered the juice medicinally for many disorders, which practice was continued to later times by our English herbalists. As an esculent, the Sow-thistle has never been much in favour here ; but as a potherb it is sometimes used by the peasantry in some districts. In Germany the leaves are put into salads, and we can

but remark how great is the variety of vegetable food employed in the cookery of our continental neighbours, who are certainly more disposed than ourselves to avail themselves of the natural productions of their country.

SPECIES II.—**SONCHUS ASPER.** *Hoffm.*

PLATES DCCCXI. DCCCXII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1912.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCX. Fig. 2.

S. oleraceus γ et δ *asper*, *Linn.* Sp. Plant. p. 1117.

S. fallax, *Wallr.* Sched. Crit. p. 432.

Annual, with radical leaves. Stem branched. Leaves slightly rugose, obovate, undivided or pinnatifid or runcinate-pinnatifid, undulated and spinous - dentate or dentate, amplexicaul with blunt adpressed auricles. Anthodes in an irregular umbel. Phyllaries glabrous. Achenes compressed, longitudinally ribbed, but not transversely wrinkled.

In cultivated ground, road-sides, and waste places. Very common, and generally distributed.

England, Scotland, Ireland. Summer and Autumn.

Extremely like *S. oleraceus*, with which it is reunited by Mr. Benthams; and, were it not for the smoothness of the fruit between the ribs, it would be impossible to consider it more than a sub-species. The leaves are more often undivided, more rugose, from the veins being more deeply impressed on the upper surface; the margins are more or less waved, sometimes to a very considerable extent; the teeth are more acute, closer together, and often so firm as to be almost spiny; they are of a duller green, and often decidedly glaucous; when pinnatifid, the terminal lobe is smaller in proportion, and the auricles of the leaves in the middle of the stem are bent down and round, instead of remaining in the same plane as the lamina of the leaf, so that when the plant is once known, it can be recognized even when not in fruit.

Rough Sow-thistle.

French, *Laitron Rude.* German, *Rauche Saudistel.*

SPECIES III.—**SONCHUS ARVENSIS.** *Linn.*

PLATE DCCCXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1256.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXII.

Perennial, with radical leaves. Rootstock with very long slender extensively creeping stolons. Stem simple, or nearly so, up to the inflorescence. Lower leaves persistent, narrowly oblanceolate

sub-acute, undivided or pinnatifid or runcinate-pinnatifid, with the lobes usually not longer than broad; middle and upper stem-leaves lanceolate, generally undivided, abruptly acuminate, amplexicaul with rather short rounded adpressed auricles; all more or less undulated and spinous-denticulate at the margins. Anthodes rather few, in a corymb or umbellate corymb. Peduncles and phyllaries with scattered elongate yellowish-green gland-tipped hairs (very rarely glabrous). Achenes slightly compressed, with numerous nearly equal transversely rugose ribs.

In fields and cultivated ground, waste places, and by the banks of ditches. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock emitting numerous white fleshy subterranean stolons, which send up small tufts of radical leaves. Flowering-stems 18 inches to 5 feet high, hollow, angular from the presence of elevated lines decurrent from the midribs of the leaves, generally simple, but in large examples, producing branches terminated by corymbs in the axils of the upper leaves. Leaves 6 inches to 1 foot long, varying much in the depths of the sinuations or incisions, and sometimes undivided, the upper leaves generally so; margins unequally denticulate, the denticulations sub-spinous at the apex. Anthodes 1 to 2 inches across when expanded. Florets bright-yellow. Achenes light reddish-brown. Pappus white, silky, scarcely exceeding the phyllaries. Plant glabrous, except the upper part of the stem, peduncles, and phyllaries, which are clothed with long hairs tipped with pale greenish-yellow glands. Leaves green and shining above, glaucous beneath.

On the Continent a variety with the peduncles glabrous has been observed, but it has not been noticed in Britain.

A very tall and luxuriant form, with the lobes of the leaves often twice as long as broad, occurs in marshy places and by the sides of ditches: this has frequently been mistaken for *S. palustris*.

Corn Sow-thistle.

French, *Laitron des Champs*. German, *Feld-Saudistel*.

SPECIES IV.—*SONCHUS PALUSTRIS*. Linn.

PLATE DCCCXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 3429.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXIV.

Perennial, without radical leaves. Rootstock not creeping, without elongate stolons. Stem quite simple up to the inflo-

rescence. Lower leaves withering before the flowers expand, and as well as the middle ones, pinnatifid, with a narrow undivided strip on each side of the midrib, and a few long distant divaricate or falcate lobes with their length greater than their breadth on each side; terminal lobe deltoid, acuminate or hastate; upper leaves strapshaped, undivided, with rather long acute spreading auricles, all quite flat and repand-denticulate or entire, with projecting callous points. Anthodes numerous in a compound umbellate corymb. Peduncles and phyllaries thickly clothed with rather short olive-green gland-tipped hairs, very rarely glabrous. Achenes prismatical, very slightly compressed, with 4 of the ribs much larger than the others; the ribs indistinctly transversely rugose.

In marshes, by the sides of tidal rivers, and in fens. Very rare. It has occurred in Kent, Essex, Suffolk, Norfolk, Cambridge, and Hants; but I am not aware that it is to be found now (1865) except among beds of reeds on the banks of the Thames behind Plumstead Butts, immediately below Woolwich, where it was rediscovered a few years ago by Mr. A. Irvine.

England. Perennial. Early Autumn.

Rootstock producing short thick fleshy subterranean shoots, terminated by closed buds rising vertically close together, so that the roots do not spread over the ground. Stem 3 to 7 feet high, with a very large hollow in the centre, angular, from the midrib of the leaves being decurrent. Leaves very numerous, the lower ones soon withering, those on the middle of the stem and above it with few lateral lobes, but these, when present, are long and narrow and project abruptly beyond the general outline of the leaf; auricles very acute. Peduncles elongate, produced so nearly from one point, that the inflorescence at first sight appears to be a compound umbel, the outside branches longer than the inner. Anthodes $\frac{3}{4}$ to 1 inch across. Florets pale-yellow. Achenes pale fawn-colour, quadrangular from the prominence of 4 of the ribs. Pappus silky, but slightly exceeding the phyllaries.

A very distinct species, which can never be mistaken when it has once been seen, differing from the other British species in the same way that the Accipitrina group of the genus *Hieracium* does from the Pulmonarea section; but the large marsh form of *S. arvensis* has been frequently recorded for it by persons unacquainted with *S. palustris*. The stem of the latter is perfectly straight, much stouter in proportion to its height, with the central hollow greater. The leaves are narrower, much more gradually and more acutely pointed, and the lobes in the lower ones project abruptly from the general outline of the leaf; all the leaves have the margins flat and

nearly straight, with projecting points, not scalloped into small teeth, as in *S. palustris*. The anthodes are more numerous, smaller, and the florets paler yellow. The phyllaries are narrower, with shorter hairs tipped with olive glands, and consequently appearing of a deeper green than those of *S. arvensis*. The achenes are larger, paler in colour, less compressed, with the ribs unequal and less rugose.

Marsh Sow-thistle.

French, *Laitron des Marais*. German, *Sumpf-Saudistel*.

GENUS XL.—CREPIS. *Linn.*

Anthodes many-flowered. Pericline oblong or oblong-ovoid, of numerous phyllaries regularly imbricated in several series, or more frequently in 2 series, with the outer ones shorter. Clinanth naked or fibrillous. Achenes cylindrical or prismatic, with 10 to 30 ribs, narrowed towards the apex, and sometimes prolonged into a beak. Pappus of white (rarely dirty-white) simple, often silky filiform hairs.

Herbs of various habit, with commonly rather large anthodes of yellow, orange, red, or pink flowers.

The name of this genus of plants comes from *κρεπίς* (*krepis*), a shoe, the blossom bearing some resemblance to the form of a slipper.

SUB-GENUS I.—BARKHAUSIA. *Mönch.*

Achenes (or at least those of the disk) attenuated into a slender beak. Pappus of numerous soft, silky, pure white hairs.

SPECIES I.—CREPIS FÆTIDA. *Linn.*

PLATE DCCCXV.

Billot. Fl. Gall. et Germ. Exsicc. No. 810.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXXXIV.

Barkhausia fœtida, *D. C.* Prod. Vol. VII. p. 158.

Borkhausia fœtida, *Hook. & Arn.* Brit. Fl. ed. viii. p. 215.

Annual or biennial. Stem branched chiefly in the lower half or from the base, sparingly leafy. Leaves runcinate- or lacerate-pinnatifid. Anthodes drooping in bud, sub-solitary, corymbosely arranged. Peduncles long, uncurved, slightly thickened upwards. Phyllaries hairy, the inner ones at length indurated and folded

round the exterior achenes, downy within; exterior ones lax. Exterior achenes with a beak shorter than the phyllaries; central ones with the beak as long as, or longer, than the phyllaries. Pappus pure-white, of soft silky hairs, much exceeding the phyllaries.

In chalky places and on shingle and railway banks. Rare. It occurs in Sussex, Kent, Essex, Suffolk, Norfolk, Cambridge, and Herefordshire. It is abundant on the shingle between Walmer Castle and Kingsdown, Kent, which is the only station in which I have seen it growing.

England. Annual or Biennial. Summer and Autumn.

Leaves chiefly radical. Stem 9 inches to 2 feet high, erect when solitary, but often much branched from the base when the central branch-stem, the others spreading-ascending, and curving upwards. Branches all terminating in anthodes, which are corymbosely arranged; but the peduncles are so long and remote from each other, that the inflorescence loses much of the corymbose character, and might better be described as solitary anthodes upon corymbosely-arranged branches. Pericline ovoid in bud, when it hangs down. Anthodes $\frac{3}{4}$ inch across, bright-yellow. Achenes orange-brown, the exterior ones with a rather stout beak, not extending to the tip of the phyllary in which it is enclosed, and in which it remains even after the phyllaries spread like a star; inner ones with much longer beaks, so that the whole of the pappus projects beyond the tips of the phyllaries; all with numerous fine rugose slender ribs. Leaves densely pubescent; pericline hoary, from the abundance of grey hairs, which are sometimes intermixed with glandular ones.

Stinking Hawk's-beard.

French, *Crépide Fétide*. German, *Stinkende Grundfeste*.

SPECIES II.—*CREPIS TARAXACIFOLIA*. Thail.

PLATE DCCCXVI.

Billot, Fl. Gall. et Germ. Exsicc. No. 1913.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXXXVII. Fig. 2.

Barkhausia taraxacifolia, *D. C.* Prod. Vol. VII. p. 154.

Borkhausia taraxacifolia, *Hook. & Arn.* Brit. Fl. ed. viii. p. 215.

Biennial. Stem branched, chiefly in the upper half, and often also from the base, sparingly leafy. Leaves runcinate- or lacerate-pinnatifid. Anthodes erect in bud, in corymbs terminating the stem and branches. Peduncles rather long, straight or only slightly incurved, not thickened upwards. Phyllaries hairy or nearly glabrous, the inner ones slightly indurated in fruit, not

folded over the exterior achenes, downy within; the exterior ones lax. Achenes all with beaks shorter than the phyllaries. Pappus pure white, of soft hairs, slightly exceeding the phyllaries.

In chalky places and by roadsides, and in waste places in limestone districts. Local. Plentiful in Kent. It occurs also at Bookham, Surrey; in Suffolk; in the South of Essex; at Scarborough; and in Carnarvonshire.

England. Biennial. Summer and Autumn.

Radical leaves numerous. Stem 6 inches to 2 feet high, erect if solitary, but with the lateral ones curving upwards if there be several produced from the crown of the root; branches rather few, terminating in corymbs of anthodes, which are $\frac{3}{4}$ to 1 inch across. Florets yellow, the exterior ones striped with red on the back. Pericline generally greyish, from the presence of downy hairs, but sometimes nearly glabrous. Achenes orange-brown, with about 10 rugose ribs, the beaks not reaching to the extremity of the phyllaries. Leaves and stem hairy.

This is sometimes confounded with *C. fœtida*; but the branching is totally different; the anthodes are always erect, the fruiting pericline has not the ribbed appearance which that of *C. fœtida* presents, and it is more cylindrical, from the base of the pappus being included within the tips of the phyllaries; the pappus is also less silky.

Small Rough Hawk's-beard.

French, *Crépide à Feuilles de Pissenlit*. German, *Borstige Grundfeste*.

SPECIES III.—*CREPIS SETOSA*. *Hall. fil.*

PLATE DCCCXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1259.

Reich, Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXXXV. Fig. 1

Barkhausia setosa, *D. C. Prod.* Vol. VII. p. 155.

Borkhausia setosa, *Hook. & Arn.* Brit. Fl. ed. viii. p. 215.

Annual. Stem branched, leafy, sparingly bristly-hairy. Radical leaves runcinate-pinnatifid or undivided and dentate; stem-leaves sagittate-amplexicaul, with acute projecting lobes towards the base; all sparingly bristly-hairy. Anthodes erect in bud, in corymbs terminating the stem and branches. Peduncles moderately long or short, straight or slightly incurved, not thickened upwards. Phyllaries keeled, clothed with long distant stiff bristly hairs, the inner ones indurated, not folded over the exterior achenes, downy within; exterior ones spreading. Achenes all with beaks

much shorter than the phyllaries. Pappus pure-white, of soft hairs, scarcely exceeding the phyllaries.

In cultivated fields. Introduced with clover-seed, and not persistent in any of its localities.

[England, Scotland.] Annual. Summer and Autumn.

Stem erect, 9 inches to 2 feet high, sharply angular. Anthodes $\frac{1}{2}$ inch across. Pericline strangulated in fruit. Pappus scarcely reaching beyond the phyllaries. The stiff bristles on the upper part of the peduncles and phyllaries distinguish this species from all the others, but the general appearance of the plant is extremely similar to that of the succeeding species, *C. virens*, but the florets are of a brighter yellow.

Bristly Hawk's-beard.

French, *Crépide Hérisée*. German, *Borstige Grundfeste*.

SUB-GENUS II.—EU-CREPIS.

Achenes without an evident beak, but attenuated towards the apex. Pappus of numerous soft silky pure-white hairs.

SPECIES IV.—CREPIS VIRENS. *Linn.*

PLATE DCCCXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 49.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLI.

Crepis tectorum, *Sm.* Eng. Bot. No. 1111 (non *Linn.*).

Annual. Stem branched, glabrous or puberulent, leafy, but very sparingly so in stunted specimens. Radical leaves runcinate-pinnatifid or obovate and nearly entire or lyrate-pinnatifid; stem-leaves sagittate-amplexicaul, variable, the uppermost ones linear and entire; all glabrous. Anthodes erect in bud, in corymbs terminating the stem and branches. Peduncles moderately long or short, slender, straight or slightly incurved, not thickened upwards. Phyllaries puberulent, often with a few gland-tipped hairs, glabrous on the inside, the outer ones adpressed. Achenes without beaks, but attenuated towards the apex, with 10 smooth ribs. Pappus of pure-white soft silky hairs, longer than the achene, not exceeding the phyllaries.

In dry waste places, wall-tops, cultivated ground, &c. Very common, and generally distributed.

England, Scotland, Ireland. Annual or biennial. Summer and Autumn.

A very variable plant, sometimes with a single erect stout copiously leafy stem 2 feet or more high; at other times, as when growing in dry situations, with numerous ascending stems 6 inches long, with very few leaves and divaricate peduncles; but every intermediate form between these extremes may be found. Anthodes $\frac{1}{4}$ to $\frac{3}{4}$ inch across. Florets yellow. Achenes reddish-brown, distinctly attenuated at the top, but without any beak. Plant glabrous or sub-glabrous; the stem, midribs of the leaves, peduncles, and phyllaries being the only portions which are hairy.

Smooth Hawk's-beard.

French, *Crépide Verte.* German, *Grüne Grundfeste.*

SPECIES V.—**CREPIS BIENNIS.** *Linn.*

PLATE DCCCXIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1915.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXXXIX.

Biennial. Stem stout, branched in the upper half, hairy, leafy. Leaves runcinate- and lyrate-pinnatifid, hairy. Anthodes erect in bud, in corymbs terminating the stem and branches. Peduncles moderately long, straight or nearly so, not thickened upwards. Phyllaries hairy, the hairs often intermingled with longer gland-tipped ones; the inner phyllaries downy within; exterior ones lax or spreading. Achenes not beaked, fusiform-cylindric, slightly attenuated towards the apex, with 13 slightly rugose ribs. Pappus of pure-white soft hairs, slightly exceeding the phyllaries.

In chalky places, roadsides, and borders of fields. Local. Common in Kent, also in Surrey, Essex, Cambridge, and Leicestershire, and reported from other counties. It is, however, impossible to give the distribution of this species correctly, as it has been so often confounded with *C. taraxacifolia*.

England. Biennial. Summer and Autumn.

Extremely like *C. taraxacifolia*, but a stouter plant, with the stem rather less branched and much more leafy, the peduncles shorter and thicker, the anthodes larger, the achenes without a

beak and with more numerous ribs, the pappus projecting less beyond the phyllaries than in *C. taraxacifolia*.

From large forms of *C. virens*, the roughly hairy leaves and stem, and the stem-leaves not sagittate at the base, are sufficient to distinguish it at first sight; the anthodes are twice as large, the achenes are much longer and narrower, and with more numerous ribs, and the pappus projects further beyond the phyllaries.

In the first edition of "English Botany," No. 149, the fruit of *C. taraxacifolia* has been placed on the plate which contains a very characteristic figure of *C. biennis*.

Large Rough Hawk's-beard.

French, *Crépide Bisannuelle*. German, *Zweijährige Grundfeste*.

SPECIES VI.—**CREPIS SUCCISIFOLIA.** *Tausch.*

PLATE DCCCXX.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXI. Fig. 1.

Hieracium molle, *Jacq. Sm.* Eng. Bot. No. 2210.

Crepis hieracioides, *Willd.* D. C. Prod. Vol. VII. p. 170.

Perennial. Stem rather slender, branched only above, glabrous or hairy below, leafy. Lower leaves oblanceolate, attenuated into a rather long winged petiole; middle and upper ones sessile, semi-amplexicaul, oblong or oval; all repand or entire, sparingly hairy or glabrous. Anthodes few, erect in bud, in a corymb terminating the stem. Peduncles rather long, slightly incurved, not thickened upwards. Phyllaries puberulent, with a few olive gland-tipped hairs; exterior ones very short and adpressed. Achenes not beaked, fusiform-cylindric, attenuated towards the apex, with 20 ribs. Pappus of pure-white soft hairs, scarcely exceeding the phyllaries.

On rocks, by the sides of streams, and in woods, in mountainous districts. Rare. From Teesdale and Settle in Yorkshire, northward to the Lynn of Corymuilzie, Aberdeenshire, and Glen Luss, Dumbartonshire.

England, Scotland, Ireland. Perennial. Autumn.

Stem erect, 1 to 2 feet high. Lower leaves gradually attenuated at the base, blunt at the apex; upper ones semi-amplexicaul, with short rounded auricles. Anthodes about 1 inch across. Florets bright-yellow. Achenes about as long as the pappus, brown. Plant green, glabrous, or sparingly hairy.

Scabious-leaved Hawk's-beard.

French, *Crépide à Feuilles de Sisymbre*. German, *Tausch.*

SUB-GENUS III.—ARACIUM. *Monn.*

Achenes not beaked, cylindrical, scarcely attenuated towards the apex. Pappus of stiff brittle yellowish-white hairs.

SPECIES VII.—CREPIS PALUDOSA. *Mönch.*

PLATE DCCCXXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 411.

Reich, Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXIII.

Hieracium paludosum, *Linn.* *Sm.* Eng. Bot. No. 1094.

Soyeria paludosa, *Gr. & Godr.* Fl. de Fr. Vol. II. p. 342

Perennial. Stem rather slender, branched only above, glabrous, leafy. Lower leaves elliptical or oval, oblanceolate, attenuated into a short winged petiole; middle stem-leaves panduriform, oval- or elliptical - acuminate, amplexicaul; upper leaves ovate-lanceolate - acuminate, amplexicaul, with blunt abruptly acuminate auricles; all glabrous, dentate or runcinate-dentate. Anthodes few, in a corymb terminating the stem. Peduncles moderately long, nearly straight, not thickened upwards. Phyllaries woolly, with numerous black gland-tipped hairs; the exterior ones very short, adpressed. Achenes not beaked, cylindrical, not attenuated either towards the base or apex, 10-ribbed. Pappus of yellowish-white stiff fragile hairs, slightly exceeding the phyllaries.

In damp shady places and woods, and by the sides of streams. Not uncommon in mountainous districts. From Glamorganshire, Shropshire, Leicestershire, and Yorkshire, northward to Ross and Aberdeen.

England, Scotland, Ireland. Perennial. Late Summer and Autumn.

Stem erect, striate, 1 to 3 feet high. Leaves variable in the depth of the dentition; the lower ones generally with the teeth most prominent; the upper ones usually entire, except at the base; all except the lowest amplexicaul. Phyllaries black from the abundance of gland-tipped hairs. Florets yellow. Achenes olive, perfectly cylindrical (in all the specimens I have examined). Plant glabrous.

A very puzzling plant, agreeing in habit with *Crepis*, in which it is generally placed by modern authors, but differing in its achenes not being attenuated towards the apex, and the pappus being yellowish-white, and composed of brittle hairs, in which points it approaches *Hieracium*, in which genus it was placed by Linnæus. It

probably ought to be considered as belonging to a distinct genus, intermediate between the two.

Marsh Hawk's-beard.

GENUS XLI.—HIERACIUM. Linn.

Anthodes many-flowered. Pericline oblong-ovoid, of numerous phyllaries, regularly imbricated in several series, or in 2 series with the outer ones much shorter. Clinanth naked, with the margins of the pits commonly bordered with fimbriated membrane. Achenes cylindrical-prismatic, attenuated towards the base, truncate at the apex, never beaked, nor terminated by a cup-like disk. Pappus of dirty-white setaceous simple hairs.*

Herbs, with various habit and rather large anthodes. Florets yellow, rarely orange-red.

The name of this genus of plants comes from *iepaξ* (*hierax*), a hawk, because, according to Pliny and other old writers, that bird "was wont to quicken his sight" with the juice of the species; or, Dr. Withering suggests that it may have arisen from the mixture of black and yellow in some species resembling the colour of a hawk's eye; hence possibly the ancient curative inference—an approach to the modern doctrine of "similia similibus curantur."

SECTION I.—PILOSELLOIDEA.

Stoloniferous. Stem scape-like, often leafless, or with a single leaf. Phyllaries irregularly imbricated. Florets glabrous at the tips. Achenes minute, crenulated at the top. Pappus of a single row of equal very slender hairs.

* In this difficult genus I have followed almost implicitly the views of Mr. James Backhouse, jun., as set forth in his monograph of British Hieracia. He has paid most careful attention to the species of this genus both in the wild and cultivated states, so that it is only on very clear evidence that I have ventured to deviate from the limits he has assigned to the specific forms. His opinions I deduce not only from his published work, but from the large collections of Hieracia belonging to Mr. Hewett C. Watson and myself, which have been examined and named by him. Many of Mr. Backhouse's species are no doubt merely sub-species; but I do not feel that I have that intimate knowledge of the limits of variation of these sub-species which is required to enable me to combine them into super-species. The six species (as *H. cerinthoides* must be expunged) of Mr. Bentham are certainly far below the number of ver-species and super-species which occur in Britain; but how many there are of these we require more careful examination to decide. I do not venture to quote continental authorities, as in many cases they do not divide the species in the same way as Mr. Backhouse.

SPECIES I.—**HIERACIUM PILOSELLA.** *Lin.*

PLATE DCCCXXII.

Billot, Fl. Gall. et Germ. Exsicc. Nos. 1261, 1262.*Reich.* Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLVIII.*Back.* Mon. Hier. p. 13. *Bab.* Man. Brit. Bot. p. 199. *Hook. & Arn.* Brit. Fl. ed. viii. p. 217. *Fries*, Epic. p. 10.

Stolons elongate, with the leaves scattered, rarely short, and sub-rosulate. Leaves oblanceolate or obovate-oblanceolate, or strapshaped-oblanceolate, entire, rather obtuse, with long hairs on both sides, felted with stellate down beneath. Scapes leafless. Anthode solitary. Pericline ovate-ovoid, at length ovate-conical. Inner phyllaries acute. Styles yellow.

Var. α , *genuinum*.

Stolons elongated, with distant leaves.

Var. β , *pilosissimum*. *Fries*.II. *Peleterianum*, *Mérat*, Fl. Par. p. 305.

Stolons short and thick, with the leaves often sub-rosulate. Radical leaves often narrower than in var. α .

On dry banks and pastures, wall-tops, &c. Very common, and generally distributed. Var. β rare. Freshwater Gate, Isle of Wight (Mr. Hambrough); also on Craig Breidden, Montgomeryshire (Mr. Backhouse), and in Dovedale, Derbyshire (Mr. Borrer!). Abundant in Jersey, especially in St. Brelade's Bay.

England, Scotland, Ireland. Perennial. Early Summer to Autumn.

Rootstock branched, emitting numerous prostrate stolons, which creep above ground, or more rarely are ascending at the apex. Leaves at the base of the scape in a rosette 1 to 5 inches long, somewhat obtuse, narrowed at the base, but not distinctly stalked, felted and generally white with stellate down beneath, and

Fries, in his "Epicrisis Generis Hieraciorum," usually quotes Mr. Backhouse's species with a mark of admiration, to indicate that he has seen specimens, and as he generally agrees very closely with the English authority, I have made an exception in his case. Without the aid of specimens, I do not dare to refer to the views of Messrs Grenier, Griesbach, C. H. Schultz, and Jordan, because in this genus descriptions alone are insufficient to point out the limits of the species as intended by these authors.

furnished on both sides and on the petioles with long rather stiff hairs. Scape erect, 2 to 15 inches high, leafless, but sometimes with 1 to 3 small hairy bracts, more or less clothed with stellate down (especially towards the top) and short black gland-tipped hairs frequently intermingled with long black-based simple hairs. Pericline about $\frac{1}{2}$ inch long; phyllaries clothed with stellate down, black gland-tipped hairs, and elongate simple black-based hairs in variable proportions. Florets pale-yellow, the exterior ones red or purple on the back. Achenes $\frac{1}{10}$ inch long, cylindrical-striate, nearly black. Pappus dirty-white, brittle.

Var. β is usually a more hairy plant, and the leaves are often narrow, but the only tangible difference is the short stolons, which do not root until after flowering, and have the leaves sometimes so close together that they may almost be said to be in a rosette.

Mouse-ear Hawkweed.

French, *Epervière Piloselle*. German, *Gemeines Habichtskraut*.

This plant differs from all other milky-juiced plants, being less bitter and more astringent. Its common English name is derived from the notion that the hairy termination of its leaves resembles a mouse's ear. Its pale lemon-coloured blossoms have, in favourable seasons, the smell of raspberry jam. In Gloucestershire, and probably elsewhere in the South, a beautiful little gold and green beetle haunts this flower, loving to

"Sit in the centre, and enjoy bright day,"

and at certain angles of view is scarcely distinguishable, by reason of its lustre.

We find in Culpepper's Herbal that this plant, if "outwardly applied, is singular good for all the defects and diseases of the eyes, used with some women's milk," and that "the distilled water cleauseth the skin, and taketh away freckles, spots, morpew, or wrinkles in the face."

SPECIES II.—*HIERACIUM AURANTIACUM*. Linn.

PLATE DCCCXXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 413.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCLXXIV. Fig. 2.

Back. Mon. Hier. p. 15. *Bab*. Man. Brit. Bot. ed. v. p. 200. *Hook. & Arn*. Brit. Fl. ed. viii. p. 187. *Fries*, Epic. p. 24.

Stolons short, often absent. Leaves oblanceolate or elliptical-oblanceolate, entire, sub-acute, with long hairs on both sides, nearly or quite destitute of stellate down beneath. Scapes leafy below; leaves sessile, narrowed at the base. Anthodes few, corymbose. Pericline ovate-ovoid. Phyllaries obtuse. Styles brown.

In pastures and woods. Not native, but naturalized in many places in Scotland and the North of England.

[England, Scotland.] Perennial. Summer.

Radical leaves few, but there are generally 2 or 3 crowded at the base of the stem, from 2 to 6 inches long, sub-petiolate; those above the base of the stem quite sessile. Upper half of the stem leafless, or with 1 or 2 minute bracts. Stem 9 to 18 inches high, sparingly clothed with stellate down, black gland-tipped hairs, and long black-based hairs; peduncles and phyllaries thickly clothed with these hairs. Anthodes 3 to 12 in a corymb, at first very compact, afterwards lax. Florets brownish-red. Achenes $\frac{1}{10}$ inch long, purplish-black.

Orange Hawkweed.

French, *Epervière d'Orange*. German, *Pomeranzenblumiges Habichtskraut*.

SECTION II.—PULMONAREA (including AURELLA, *Fries*).

Rootstock not stoloniferous. Leaves chiefly in a radical rosette, and usually persistent until the time of flowering. Stem generally with few leaves. Phyllaries irregularly imbricated. Achenes large, or rather large, not crenulated at the apex. Pappus of unequal rigid brittle hairs.

GROUP A.—ALPINA.

Plant green, more rarely slightly glaucous, not viscid-glandular. Hairs simple; neck of the rootstock not densely woolly. Radical leaves in a rosette, persistent until after flowering. Stem scape-like, with leaves usually few and often bract-like. Phyllaries dark-olive or nearly black, clothed with shaggy wool or silky hairs, often intermixed with gland-tipped hairs. Ligules more or less ciliated at the apex, rarely sub-glabrous. Achenes large, brownish-black.

SPECIES III.—HIERACIUM CALENDULIFLORUM.

Back.

PLATE DCCCXXIV.

Back. Mon. Hier. p. 23. *Deb.* Man. Brit. Bot. ed. v. p. 201.

H. eximium, var. β , *Hook. & Arn.* Brit. Fl. ed. viii. p. 219.

Stem simple, or slightly branched at the apex, sparingly clothed with stellate down and simple black-based hairs, densely so in the upper part, where there are also short black gland-tipped hairs. Radical leaves oval or broadly elliptical-obovate, somewhat abruptly narrowed into broad petioles, rather obtuse, coarsely and remotely dentate; the primordial ones suborbicular; stem-leaves few, often only 1 above the middle of the stem, small, sessile,

strapshaped or strapshaped-oblongate, often bract-like ; all clothed on both sides with long soft white hairs. Anthode generally solitary in the wild plant, more rarely 2 or 3 in a corymb. Pericline rounded at the base. Phyllaries acute, dark-olive, shaggy, with rather long and stiff white hairs with black bases ; the outer ones lax. Florets hairy externally and at the tips.* Styles livid. Plant green.

In mountains at an elevation of 3,000 to 4,000 feet. I have gathered it only on Loch-na-gar, Aberdeenshire, but Mr. Backhouse states that it is also found in the region between Loch-na-gar and the northern part of the Clova district, Corrie of Clova, and damp micaceous ravine above the Spital of Glen Shee, Forfarshire ; apparently most partial to granitic soils.

Scotland. Perennial. Autumn.

Root-leaves numerous, persistent, narrowed into indistinct broadly-winged petioles ; the outer ones obtuse ; the inner subacute, all more or less strongly toothed, especially towards the base ; the teeth remote, often longer than broad, spreading ; apical half of the leaf generally nearly entire. Anthodes frequently 2 or 3 inches across. Pericline $\frac{3}{4}$ inch long. Florets bright-yellow.

Marygold-flowered Hawkweed.

SPECIES IV.—*HIERACIUM EXIMIUM*. *Back.*

PLATE DCCCXXV.

Back. Mon. Hier. p. 20. *Bab. Man. Brit. Bot. ed. v.* p. 200.

H. eximium, var. *a*, *Hook. & Arn. Brit. Fl. ed. viii.* p. 219.

Stem simple, or slightly branched at the apex, sparingly clothed with stellate down and simple black-based hairs, densely so in the upper part, where there are also a few short black gland-tipped hairs. Radical leaves elliptical or strapshaped-oblongate, very gradually attenuated into the petiole, rather acute, remotely denticulate or dentate-serrate or inciso-serrate or nearly entire ; stem-leaves few, often only 1 above the middle of the stem, small, sessile, strapshaped ; all clothed on both sides with long rather soft white hairs. Anthodes generally solitary in the wild plant, more rarely 2 to 4 in a corymb. Pericline ovoid, rounded or sub-

* In this genus it is necessary to examine the buds before expansion, as the hairs at the apex of the ligules are deciduous.

truncate at the base. Phyllaries acute, dark-olive, with rather long and stiff white hairs with black bases; outer ones lax. Florets hairy externally and at the tips. Styles livid, yellow in var. β . Plant green.

Var. α , *genuinum*.

H. villosum, Sm. Eng. Bot. No. 2379.

Stem elongated, 6 to 15 inches high. Radical leaves elliptical-oblongate, generally toothed. Style livid.

Var. β , *tenellum*. Back.

Stem 4 to 8 inches high, more slender than in var. α . Radical leaves narrower, usually entire. Pericline smaller, of a darker colour. Styles yellow.

On cliffs at an elevation of 2,000 to 3,000 feet. Not uncommon on the mica-slate rocks of the Clova district and head of Glen Callater, rare on the granite, where it occurs sparingly on Loch-na-gar, Ben-na-bour, and Little Craignidale, Aberdeenshire, and Ben Alder, Inverness-shire; var. β on granitic mountains of the Cairngorum range. I have gathered it on Cairntowl and Loch-na-gar, and Mr. Backhouse on cliffs of Ben-na-main, above Loch Awn, Ben-na-bour and Little Craignidale (Braemar), Caness, and cliffs above Loch Ceanndin (?), Forfarshire.

Scotland. Perennial. Autumn.

Extremely like *H. calenduliflorum*, with which Dr. Walker nott is probably right in combining it. The leaves, however, are longer, narrower, and more acute; the teeth are generally smaller, and when large, point forward and not outward, as in *H. calenduliflorum*. The anthodes are considerably smaller; the pericline generally about $\frac{1}{2}$ inch long, scarcely so dark in colour, and with the phyllaries not so numerous. Mr. Backhouse states that the leaves are entire when growing on crumbling rock and toothed when on hard rock.

Var. β is considered a distinct species by Professor Grenier.

Grey-headed Hawkweed.

SPECIES V.—**HIERACIUM HOLOSERICEUM.** Back.

PLATE DCCCXXVI.

Back. Mon. Hier. p. 19. Bab. Man. Brit. Bot. ed. v. p. 200.

H. alpinum, var. β , Hook. & Arn. Brit. Fl. ed. viii. p. 218.

H. alpinum, Sm. Eng. Bot. No. 1110.

Stem always simple, densely clothed with long soft black-based hairs, and sparingly with stellate down, occasionally intermixed with a few short black gland-tipped hairs. Radical leaves oblanceolate or oblong-oblanceolate, gradually attenuated into the petiole, blunt, entire; the inner ones narrower, sub-acute, and sometimes sparingly and remotely dentate-serrate; stem-leaves 1 or 2, small, linear oblanceolate or strapshaped, sometimes absent, all sparingly clothed with long woolly hairs on both sides. Anthodes solitary both in the wild and cultivated state. Pericline turbinate, narrowed at the base. Inner phyllaries adpressed, acute; outer ones lax, broad, obtuse; all olive-black, very densely clothed with very long silky-woolly black-based hairs. Florets hairy externally and at the tips. Styles bright yellow.

Alpine cliffs at an elevation of 2,000 to 3,500 feet. Glen-amara, Langdale Pikes, and head of Pierce Gill, Seaw-fell, Cumberland, on slate. Loch-na-gar and Craig Dhuloch, Aberdeenshire, on granite. Cliffs of Cauess, Canlochen Glen, and to the south of Bradoonie, Clova Mountains, Forfarshire, and Ben Lawers, Perthshire, on mica-slate (Backhouse). I have myself only gathered it on Loch-na-gar. Mr. H. C. Watson has it from the north of the Sow of Atholl and Ben Nevis.

Scotland. Perennial. Autumn.

Stem 3 to 10 inches high, and, as well as the anthode, much more thickly clothed with long silky wool than in any of the other species of this group, indeed, of any that have been indicated in Britain, except *H. villosum*. Leaves not so yellow a green, and (if my memory does not deceive me) slightly glaucous, narrower, blunter, and more gradually attenuated into the petiole, than in *H. eximium*, and almost always quite entire. The outer phyllaries are commonly broad, and frequently subfoliaceous.

In cultivation Mr. Backhouse states it becomes still more dwarf and shaggy, and the stem never produces more than one head.

Woolly-headed Hawkweed.

SPECIES VI.—*HIERACIUM MELANOCEPHALUM*.

Tausch.

PLATE DCCCXXVII.

H. alpinum, *Back. Mon. Hier.* p. 17. *Bab. Man. Brit. Bot.* ed. v. p. 200

H. alpinum, var. *a*, *Hook. & Arn. Brit. Fl.* p. 218.

Stem always simple, thickly clothed with stellate down, sparingly intermixed with long black-based simple hairs, and

sometimes a few short black gland-tipped hairs. Radical leaves obovate-spathulate, abruptly attenuated into the petiole, obtuse; inner ones narrower and more acute; all generally slightly dentate or serrate-dentate, with a few projecting teeth, sub-glabrous above, sparingly clothed with long woolly hairs beneath and on the margins; stem-leaves 1 or 2 (rarely 3); the lower one rather large, strapshaped-ob lanceolate, sub-petiolate; the upper one small, strapshaped, sessile, frequently absent. Anthodes solitary, both in the wild and cultivated state. Pericline hemispherical, rounded at the base. Phyllaries all rather lax, broad, acute (a few of the outer ones sometimes obtuse), nearly black, very densely clothed with short silky-woolly black-based and black hairs, interspersed with a few short black gland-tipped hairs. Florets hairy externally and at the tips; the hairs at the tips short. Styles bright-yellow.

Var. *α*, *genuinum*.

Radical leaves ovate-spathulate.

Var. *β*, *insigne*.

“Radical leaves lanceolate, with a few large teeth.” — (*Bab. Man.*)

On mountains, at an elevation of 3,000 or 4,000 feet. I have collected it only on Loch-na-gar, and at the head of Glen Callater; but, according to Mr. Backhouse, it also occurs at Corrie of Benna-bour, Braeriach, Cairntowl, Ravine of the Garachary, and Little Craigindal, Aberdeenshire, on granite; Glen Dole, Clova Mountains, Forfarshire, on mica-slate.

Scotland. Perennial. Autumn.

Stem 3 to 10 inches high, much more densely clothed with stellate down than any of the preceding, with the simple black-based hairs rather short and few. Mr. Backhouse says “nearly or quite destitute of setæ” (gland-tipped hairs); but several specimens in my own herbarium, named *H. alpinum* by Mr. Backhouse, have the stem thickly clothed with them. Leaves more suddenly attenuated into a petiole than in the three preceding, and not hairy on the upper side; the outer ones, as in the whole of this group, broader than the others; so that the more leaves the plant produces in the rosette, the narrower the innermost ones become. Pericline $\frac{1}{2}$ inch or more long, much blacker and more satiny than in the three preceding, in this, and in the shape of the leaves, showing an evident approach to the next three species, as well as by the

paucity and shortness of the hairs at the tips of the florets. The leaves are of a deeper green than in the three last species.

I am unacquainted with the var. β insigne of Professor Babington's Manual, unless it be merely a luxuriant state of the ordinary form, such as I have gathered on Loch-na-gar; but that has the leaves obovate-spathulate.

I have adopted the name *H. melanocephalum* (Tausch), which doubtless belongs to this form, instead of restricting the name of *H. alpinum* to this aberrant member of the group. There is no custom which has introduced greater confusion than that of applying the name properly belonging to a whole series of forms to one of its parts only—where this has been done, and generally received by botanists, of course such names ought to be retained, as they do not lead to confusion; but, in the present case, it is only two or three British authors who use *H. alpinum* in the sense intended by Mr. Backhouse; so that their *H. alpinum* does not represent the *H. alpinum* of continental authors.

Alpine Hawkweed.

SPECIES VII.—**HIERACIUM GRACILENTUM.** *Back.*

PLATE DCCCXXVIII.

Back. Mon. Hier. p. 24. *Bab. Man. Brit. Bot. ed. v.* p. 201. *Hook. & Arn. Brit. Fl. ed. viii.* p. 219.

Stem usually simple, rather thickly clothed with stellate down and black gland-tipped hairs, sparingly intermixed with long black-based simple hairs. Radical leaves obovate-spathulate or oblanceolate-spathulate, abruptly attenuated into the petiole, obtuse; inner ones narrower and sub-acute; all remotely denticulate or serrate-dentate, rarely coarsely toothed, sub-glabrous or hairy on the margins and beneath, and sometimes sparingly so even above; stem-leaves 2 to 4, large; lower one attenuated into a petiole; the uppermost one strapshaped, sessile. Anthodes solitary, or rarely 2 or 3 in a corymb, ovoid in bud. Pericline rounded at the base. Phyllaries broad, acute, nearly black, densely clothed with rather short black and black-based simple hairs, interspersed with short black gland-tipped hairs; inner ones adpressed, the outer more or less lax. Florets nearly or quite glabrous externally, slightly pilose at the tips. Styles livid-yellow. Plant green.

Granitic and porphyritic cliffs at an elevation of 2,000 to 4,000 feet. I have collected this species only on Loch-na-gar; but it occurs also on Ben-na-bourd, Cairntowl, and in Canlochen Glen.

Scotland. Perennial. Autumn.

This plant comes very near *H. melanocephalum*, but the stem-leaves are more developed, the lower ones generally nearly equal in size to the radical ones; the pericline is smaller, and blacker from a greater number of the hairs being destitute of white points. The florets are more glabrous on the back, and the styles duller yellow. The plant is also of a lighter green.

Slender Hawkweed.

SPECIES VIII.—**HIERACIUM GLOBOSUM.** *Back.*

PLATE DCCCXXIX.

Back. Mon. Hier. p. 25. Bab. Man. Brit. Bot. ed. v. p. 201. Hook. & Arn. Brit. Fl. ed. viii. p. 220.

Stem usually simple, very sparingly clothed with stellate down and black gland-tipped hairs, intermixed with long black-based simple hairs. Radical leaves obovate or oblanceolate, “abruptly” (Backhouse) or gradually attenuated into the petiole, obtuse; the inner ones narrower and sub-acute; all denticulate or serrate-dentate or entire, more rarely coarsely toothed, glabrous or nearly so above, generally hairy beneath and on the margins; stem-leaves few, small, rarely 2 to 4 and large; the lower ones oblanceolate, attenuated into a petiole; the upper one, or all, strap-shaped-lanceolate, sessile. Anthodes solitary or rarely 2 to 4 in a corymb, globose in bud. Pericline hemispherical, rounded at the base. Phyllaries narrow, very acute, olive-black, densely clothed with rather short black-based and black hairs, interspersed with short black gland-tipped ones. Florets sub-glabrous, externally glabrous, or slightly pilose at the tips. Styles bright-yellow. Plant green or glaucous.

On granite and felspar, at an elevation of 2,500 to 4,500 feet. I have gathered it only on Cairntowl, but it occurs also on Ben-na-main, Ben-na-muic-dhui, and the north side of Little Craigindal, Braemar.

Scotland. Perennial. Autumn.

This plant comes very near *H. gracilentum*; but the anthodes are considerably larger, the phyllaries much narrower, longer, more acute, and not so black; the buds are more globose. I cannot find any tangible difference in the shape of the leaves, judging from my specimens, which are authenticated by Mr. Backhouse.

Globose-headed Hawkweed.

SPECIES IX.—**HIERACIUM CHRYSANTHUM.** *Back.*

PLATES DCCCXXX. DCCCXXXI.

*Back. Mon. Hier. p. 34. Bab. Man. Brit. Bot. ed. v. p. 202. Hook. & Arn. Brit. Fl. ed. viii. p. 221.**H. pulmonarium, Sm. Eng. Bot. No. 2307 (?).*

Stem simple or corymbosely branched at the apex, more or less clothed with stellate down, intermingled above with black gland-tipped hairs and a few simple black or black-based hairs, and below with white simple hairs. Radical leaves rather thin, oval or elliptical, suddenly (or the inner ones gradually) contracted into rather long woolly petioles, acute (or the outer ones obtuse), coarsely and very irregularly serrate-dentate, often with a few long and very acute teeth near the base, hairy or sub-glabrous; stem generally with a few small bract-like leaves, the lowest one often much larger, attenuated at the base, and resembling the radical leaves. Anthodes solitary, or more often 2 or more in a corymb. Pericline rounded at the base. Phyllaries rather narrow; outer ones small, rather lax; all acute, nearly black, thickly clothed with short black hairs, mixed with numerous gland-tipped ones, and sometimes a few black-based hairs. Florets sub-glabrous externally, slightly pilose at the tips. Styles yellow. Plant green.

Var. α , *genuinum*.

PLATE DCCCXXXI.

H. rupestre, Bab. olim (non All.).

Anthodes usually slightly drooping; leaves very unequally incisoserrate-dentate. Pericline broad. Styles bright-yellow.

Var. β , *microcephalum*. *Back.*

PLATE DCCCXXXII.

H. atratum, Bab. olim (non Fries).

Anthodes usually erect; leaves more evenly dentate, sometimes nearly entire. Pericline smaller, narrower. Styles slightly livid.

On mountains, at an altitude of 2,000 to 3,000 feet. Not uncommon. In the Braemar and Clova districts, and in Inverness and Sutherland. Var. β on Cairntowl and Loch-na-gar, Aberdeenshire; cliffs above Lochwharral, Clova; slate rocks of Stridden Edge and Glara-mara, Cumberland.

England, Scotland. Perennial. Autumn.

Stem 3 to 18 inches high. Primary radical leaves ovate-spathulate, rather blunt; the inner ones narrower, more attenuated at the base, and acute; all generally dentate and frequently with some of the teeth, especially those towards the base, much lengthened, very acute, pointing or curving forwards. Petioles and base of the stem woolly with long white hairs. Anthodes very large when solitary, smaller when 2 or 3 together. Pericline very black, frequently without any of the hairs white at the apex.

The monocephalous forms of this species present considerable resemblance to *H. melanocephalum*, *H. gracilentum*, and *H. globosum*; but the leaves have generally much longer and more irregular teeth; the petioles and base of the stem are more clothed with white woolly hairs; the phyllaries are much more slender, and destitute of the silky appearance which those species present; they are often destitute of any white-tipped hairs. The polycephalous forms are much more common in *H. chrysanthum* than in *H. gracilentum* and *H. globosum*, and do not occur in *H. melanocephalum*.

Golden-flowered Hawkweed.

SPECIES X.—**HIERACIUM NIGRESCENS.** *Willd.*

PLATE DCCCXXXII.

Back. Mon. Hier. p. 28. *Bab. Man. Brit. Bot.* ed. v. p. 202. *Hook. & Arn. Brit. Fl.* ed. viii. p. 221. *Fries, Epic.* p. 44.

Stem simple or corymbosely branched at the apex, more or less clothed with stellate down and black gland-tipped hairs, occasionally intermingled with black or black-based simple hairs, and below with white simple hairs. Radical leaves sub-coriaceous, oval or elliptical, rather suddenly (or the inner ones gradually) contracted into hairy petioles, acute, coarsely and irregularly dentate-serrate, sub-glabrous or hairy; stem generally with 1, more rarely 2, small strapshaped leaves, sometimes bract-like; the lower one attenuated at the base, much smaller than the radical leaves. Anthodes solitary, or more often with 2 or more in a corymb, and occasionally branches beneath it also terminated by anthodes. Pericline ovate at the base. Phyllaries broad, acute, outer ones obtuse, all nearly black, thickly clothed with short black and black-based hairs, intermixed with gland-tipped ones and small yellowish glands. Florets sub-glabrous externally, slightly pilose at the tips. Styles olive-brown. Plant green.

On highland mountains, at an elevation of 2,000 to 3,000 feet, on granite, mica-slate, hornblende, &c.; but I have never gathered

it. In the Braemar and Clova districts, Western Inverness-shire, and Glen Lochy, Perthshire.

Scotland. Perennial. Autumn.

A very variable plant, when monocephalous somewhat like *H. melanocephalum*, gracilentum, and globosum, except in the texture of the leaves; but more often it has the stem distinctly branched, when it bears little resemblance to them. Stem 3 to 18 inches high; leaves sub-coriaceous, attenuated into short petioles, the margins usually remotely dentate or dentate-serrate throughout, frequently spotted with purple; stem-leaves generally very small. Anthodes, when solitary, much larger than when there are 2 or 3 on one stem. Pericline not silky, varying in hairiness, frequently without any white-tipped hairs. Styles much darker than in any of the preceding species. Plant green or slightly glaucous.

The nearest ally is *H. chrysanthum*, from which *H. nigrescens* differs in its firmer, regularly oval, more evenly dentate-serrate leaves, sub-obtuse outer phyllaries, and very dark styles. Some of the forms I am unable to distinguish, except by the colour of the styles.

Black-headed Hawkweed.

German, *Schwärzliches Habichtskraut.*

SPECIES XI.—*HIERACIUM SENESCENS.* *Back.*

PLATE DCCCXXXIII.

Back. Mon. Hier. p. 32. *Bab. Man. Brit. Bot. ed. v.* p. 202.

H. chrysanthum, var. γ , *Hook. & Arn. Brit. Fl. ed. viii.* p. 221.

H. atratum, *Fries, Epic.* p. 95.

Stem simple or corymbosely branched at the apex, more or less clothed with stellate down, intermingled above with black gland-tipped hairs and a few simple black hairs, nearly glabrous below, or with a few white simple hairs. Radical leaves rather thin, elliptical or oval, suddenly, or the inner ones rather gradually, contracted into rather long woolly petioles, acute, or the outer ones obtuse, remotely and evenly dentate or denticulate, entire towards the base, sparingly hairy on both sides; stem-leaves linear-oblongate, small. Anthodes solitary, or 2 or more in a corymb. Pericline ovate at the base. Phyllaries rather narrow, all subacute, thickly clothed with short black hairs, intermixed with numerous black gland-tipped ones, and sometimes a few black-based hairs. Florets sub-glabrous externally, slightly pilose at the tips. Style yellow or slightly livid. Plant green.

On grassy slopes and rocky margins of streamlets. On the

south-eastern side of Canlochen Glen, Forfarshire ; head of Glen Callater, Aberdeenshire ; Ben Voirlich, Dumbartonshire ; and Maol Ghyrdy, Perthshire.

Scotland. Perennial. Autumn.

Of this plant I have seen but few specimens. Dr. Walker-Arnott, in the "British Flora," unites it with *H. chrysanthum*, from which it differs in habit, in its oval and evenly and slightly dentate leaves, which have frequently small gland-tipped projections scarcely deserving to be called teeth, and in the stem being taller and more naked. The phyllaries are blunter and have more abundant stellate down, especially at the tips.

Fries quotes, with a mark of admiration, under *H. atratum* : "*H. senescens*, Backh. ! p. 32, var. *læte viridis*, foliis mollioribus."

Grey lingulate-leaved Hawkweed.

SPECIES XII.—**HIERACIUM LINGULATUM.** *Back.*

PLATE DCCCXXXIV.

Back. Mon. Hier. p. 30. *Bab.* Man. Brit. Bot. ed. v. p. 202. *Hook. & Arn.* Brit. Fl. ed. viii. p. 221. *Fries*, Epic. p. 45.

H. Saxifragum, *Bab.* olim (non *Fries*).

Stem simple or corymbosely branched at the apex, with scattered black-based hairs (of which the white points appear to be brittle) above intermixed with stellate down and a very few gland-tipped hairs, beneath with simple white hairs. Radical leaves subcoriaceous, oblong-ob lanceolate, or elliptical-ob lanceolate, gradually contracted into very short indistinct broadly-winged woolly petioles, acute (or the outer ones obtuse), remotely denticulate or dentate, or nearly entire, rough on the upper surface with stiff woolly hairs, below and on the margins with soft woolly hairs. Stem with 2 or 3 rather large lanceolate sessile or semi-amplexicaul leaves. Anthodes solitary, or more often 2 or 3 in a corymb. Pericline hemispherical at the base, at length truncate ; phyllaries rather narrow, acute, straight and projecting in bud ; outer ones very few, small, adpressed ; all nearly black, sparingly clothed with short black-based hairs and gland-tipped hairs. Florets subglabrous externally, very slightly pilose at the tips. Styles livid. Plant green.

Abundant in high alpine glens, at an elevation of 1,500 to 2,500 feet. In the Clova, Braemar, and Breadalbane districts, and in Western Inverness.

Scotland. Perennial. Autumn.

A very distinct species, with a peculiar rigid habit. Stems 8 to 24 inches high. Leaves elongate, with harsh bulbous-based hairs on the upper surface; petioles very short and indistinct; stem-leaves large in proportion. Phyllaries rather broad at the base, but tapering gradually to the apex, not at all silky, the points projecting beyond the florets in bud.

Mr. H. C. Watson possesses a form with the leaves subglabrous.

Lingulate-leaved Hawkweed.

GROUP B.—AMPLEXICAULIA.

Plant yellowish-green, rarely glaucous, viscid-glandulose; hairs on the stem and leaves gland-tipped. Neck of the root-stalk clothed with fibres. Radical leaves in a rosette, persistent until after flowering; stem with few or rather few large leaves. Phyllaries acuminate, with glandular hairs. Florets ciliated. Achenes large, brownish-black.

SPECIES XIII.—**HIERACIUM AMPLEXICAULE.** *Linn.*

PLATE DCCCXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MD.

Hook. & Arn. Brit. Fl. ed. viii. p. 222.

Stem paniculately and corymbosely branched at the apex, clothed with short yellowish gland-tipped hairs. Radical leaves oblanceolate or oblong-oblanceolate, gradually contracted into short petioles, sub-obtuse, remotely dentate or serrate-dentate, clothed with short gland-tipped hairs above and beneath; stem-leaves 1 to 6, large, the lower ones oblanceolate or oblong; upper leaves and bracts at the base of the corymbs broadly ovate, acuminate; all amplexicaul, with large rounded auricles. Anthodes numerous, in corymbs at the extremity of the stem and branches. Pericline ovate at the base. Phyllaries numerous, acuminate, rather lax, green, thickly clothed with gland-tipped hairs. Florets subglabrous, ciliated at the apex. Styles yellow.

Naturalized on the walls of Magdalen College, Oxford, and on the walls of Cleish Castle, Kinross; also said to have been found on a rock called the Garrie Barns, Clova, Forfarshire, by G. Don; but no one else has been able to detect its presence there, and Dr. Walker-Arnott says the specimen in his herbarium, labelled by Don himself, is evidently a cultivated one.

[England, Scotland.] Perennial. Late Summer.

Stem 6 to 18 inches high, branched from about the middle. Radical leaves 3 to 6 inches long, sharply dentate, especially towards the base, where the teeth are sometimes triangular and longer than broad, but more generally small; lower stem-leaves nearly as large as the root-leaves, generally oblong, but when the lowest one is near the base of the stem it is sometimes sub-panduriform, being considerably narrowed immediately above and then again expanded at the base; leaves at the base of the branches rather short, ovate-triangular, completely amplexicaul. Florets rather pale-yellow. Plant appearing yellowish-green from the number of viscous glands with which it is covered; base of the petioles and lower leaves sometimes with simple hairs as well as glandular ones.

A species very distinct from all the others which have been found in Britain.

Amplexicaul-leaved Hawkweed.

French, *Epervière embrassante*. German, *Aestiges Habichtskraut*.

GROUP C.—CERINTHOIDEA.

Plant glaucous, not glandular, with simple or denticulated hairs. Neck of the rootstock not densely clothed with single woolly hairs. Radical leaves in a rosette, persistent until after flowering; stem with few leaves, sometimes large. Phyllaries with simple or gland-tipped hairs. Florets ciliated. Achenes large, blackish-brown.

SPECIES XIV.—**HIERACIUM ANGLICUM.** *Fries.*

PLATES DCCCXXXVI. DCCCXXXVII.

Bab. Man. Brit. Bot. ed. v. p. 203. Fries, Epic. p. 57.

II. cerinthoides, *Back. Mon. Hier. p. 36. Hook. & Arn. Brit. Fl. ed. viii. p. 222*
(non *Linn. nec Fries*).

H. *Lawsoni*, *Sm. Eng. Bot. No. 2083* (non *Vill.*).

Stem corymbosely branched at the apex, more rarely simple, sparingly clothed with simple white or black-based hairs, the upper part and peduncles generally with black gland-tipped hairs and stellate down. Radical leaves oval or elliptical, contracted into rather long densely-woolly petioles, subacute or acute, or acuminate, denticulate or dentate (especially towards the base) or nearly entire on the margins, sparingly clothed with simple hairs beneath, and not unfrequently above also; stem-leaves 1 or 2, the lower one attenuated and often sub-petiolate at the base, usually semi-amplexicaul; upper one, when present, lanceolate,

sessile, or rarely amplexicaul; bracts at the base of the peduncles of the corymb strap-shaped or linear. Anthodes large, generally 2 or 3 in a terminal corymb. Pericline hemispherical at the base; phyllaries numerous, acuminate, adpressed, olive or nearly black, thickly clothed all over with short black gland-tipped hairs, generally intermixed with longer simple black-based hairs. Florets glabrous, except at the tips, where they are shortly ciliated. Styles livid. Plant glaucous.

Var. α , *genuinum*.

PLATE DCCCXXXVI.

H. cerinthoides, β , *Back*. l. c.

Radical leaves oval or elliptical, long-stalked, denticulate or nearly entire; stem-leaf or leaves scarcely amplexicaul.

Var. β , *decipiens*.

PLATE DCCCXXXVII.

H. cerinthoides, var. α , *Back*. l. c.

H. Anglicum, var. amplexicaule, *Back*. in *Bab. Man.* ed. v. l. c.

Radical leaves oval or elliptical, long-stalked, denticulate, or nearly entire; stem-leaf or leaves with the base decidedly amplexicaul.

Var. γ , *acutifolium*. *Back*.

Radical leaves serrate-dentate, narrower, more oblong, more acute, and more shortly stalked, than in the other two varieties.

By the sides of streams and cliffs in mountainous districts. Var. α not uncommon on basalt and mica-slate, in Teesdale and in the Lake district; Connemara; Cave Hill, Belfast; and frequent in the Scottish Highlands. Var. β rather rare; Benbulbin, Sligo; and the Scotch Highlands. Var. γ rare; Cairntowl and Castleton of Braemar, Aberdeenshire; Glenlochy Mountains, Perthshire.

England, Scotland, Ireland. Perennial. Autumn.

Rootstock slightly woolly at the neck. Stem 1 to 2 feet high, erect, rather stiff, generally with 1 or 2 leaves. Radical leaves with the petioles usually about as long as the lamina and narrowly winged and usually very woolly; lamina 1 to 4 inches long, varying in breadth, usually broadest about the middle, but sometimes with the broadest part nearer the base, frequently acuminate both at the base and apex; lower stem-leaves resembling the root-leaves, but rather smaller, attenuated at the base, and frequently more or less distinctly stalked in var. α : dilated and semi-

amplexicaul in var. β ; upper stem-leaf generally, but not always, smaller than the lower one, commonly sessile, but sometimes semi-amplexicaul. Anthodes large, generally 2 or 3 in number, but varying from 1 to 6 or more in the cultivated plant. Peduncles arching upwards, with stellate down and very numerous short black gland-tipped hairs. Pericline dark, sometimes nearly as black as in *H. nigrescens* and the allied species, but generally with so many white-tipped hairs that it appears greyer; outermost phyllaries small, rather lax. Florets bright pale-yellow. Plant glaucous-green, which will at once distinguish the black-headed states from *H. nigrescens* and its allies of the *Alpina* group: amongst these *H. senescens* bears the closest resemblance to *H. Anglicum*, but the latter has the stem more leafy, the radical leaves larger in proportion, with more woolly peduncles, the florets with fewer hairs on the back, the pericline larger and more enlarged at the base, and the phyllaries more numerous.

Vars. α and β appear to me inseparable from each other, but var. γ (*acutifolium*) looks very different, on account of its somewhat oblong sharply-toothed leaves.

English Hawkweed.

German, *Englisches Habichtskraut.*

SPECIES XV.—*HIERACIUM IRICUM.* *Fries.*

PLATE DCCCXXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MCCCCXCIV.

Bach. Mon. Hier. p. 40. Bab. Man. Brit. Bot. ed. v. p. 203. Hook. & Arn. Brit. Fl. ed. viii. p. 223. Fries, Epic. p. 59.

H. Lapeyrousii, Bab. in Eng. Bot. Sup. No. 2915 (non Fröl.).

Stem corymbosely branched at the apex, sparingly clothed with simple white hairs, the upper part and peduncles with stellate down, black-based hairs, and a few black gland-tipped hairs. Radical leaves oval or elliptical, gradually contracted into rather short or short broadly-winged densely-woolly petioles, acute, dentate or denticulate (especially near the middle) on the margins, sparingly clothed with simple hairs beneath or on both sides; stem-leaves 3 to 7, the lower ones attenuated and often subpetiolate at the base; upper ones amplexicaul, ovate-elliptical or lanceolate, acuminate; bracts at the base of the peduncles of the corymb lanceolate or strapshaped. Anthodes large, generally 4 or 5 in a terminal corymb. Pericline truncate at the base; phyllaries numerous, acuminate, adpressed, olive, sparingly clothed with black-based hairs intermixed with a few short black gland-tipped

hairs, sub-glabrous towards the margins. Florets glabrous, indistinctly ciliated at the apex. Styles livid. Plant glaucous.

By the margins of streams in mountainous districts. Rare. In Upper Teesdale, both on the Yorkshire and Durham sides of the Tees; banks of the Clunie near Castleton, also above the Lynn of Dee, and ravine on the southern shore of Loch Muick, Braemar; near the Grey-Mare's-Tail, Dumfriesshire; Ben Bulbin, co. Sligo; Twelve Pins of Bennabola, and on the Eagle Mountain, Connemara; Garron Head, co. Antrim. Mr. Backhouse thinks a plant in my herbarium, collected on Hoy Hill, Orkney, also belongs to this species; it, however, is in too early a stage of growth for him to be certain whether the specimens ought to be referred to *H. Iricum* or to *H. Anglicum*.

England, Scotland, Ireland. Perennial. Autumn.

Stem stout, 1 to 2 feet high, rigid. Leaves firm; lowest stem-leaf with the base not enlarged, which is sometimes the case in *H. Anglicum*; those in the middle of the stem semi-amplexicaul, the upper ones smaller and acuminate. Anthodes large, 3 to 8. Phyllaries, or at least the outer ones, rather obtuse, with fewer hairs than in *H. Anglicum*, and with these more confined to a strip down the middle of the phyllary.

This is a stouter plant than *H. Anglicum*, with shorter petioles and larger anthodes; and the stem-leaves are always more numerous and more decidedly amplexicaul.

Irish Hawkweed.

GROUP D.—VILLOSA.

Plant glaucous, not glandular, with simple soft hairs, or glabrous. Neck of the rootstock not densely clothed with woolly hairs. Radical leaves in a rosette, persistent until after flowering; stem with numerous leaves or scape-like. Phyllaries densely silky-woolly, without gland-tipped hairs; inner ones cuspidate. Florets generally glabrous. Achenes large, brownish-black.

SPECIES XVI.—**HIERACIUM VILLOSUM.** *Linn.*

PLATE DCCCXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDLXI. Figs. 1, 2.

Fries, Epic. p. 64.

Stem erect, sub-racemosely branched at the apex, woolly, usually densely so, with long simple white hairs, the upper part

and peduncles with stellate down and black-based hairs, but no gland-tipped ones. Radical leaves oblanceolate or strapshaped-oblanceolate, mucronate, undulated, nearly entire; stem-leaves 3 to 10, the lower ones attenuated at the base, the middle ones elliptical or oval, the upper ones ovate-acuminate or lanceolate; all sub-denticulate or entire, sessile or semi-amplexicaul, woolly on both sides, or only on the midrib, and ciliated with long simple white hairs; bracts at the base of the peduncles ovate or lanceolate. Anthodes large, 1 to 6, in a terminal sub-racemose corymb. Pericline hemispherical at the base; phyllaries numerous, the outer ones broad, sub-foliaceous, and lax; inner ones abruptly acute; all clothed and densely ciliated with very long simple silky white hairs, not interspersed with gland-tipped ones. Florets nearly glabrous. Styles yellow. Plant glaucous.

On alpine rocks, but there is considerable doubt if it has occurred in this country. There is, however, a specimen in Smith's Herbarium, and one in the collection of the late Mr. W. Robertson, in the Newcastle Museum: both of these are from Mr. Drummond, and said to be "from rocks near Glen Callater." On the one hand, it will be very surprising if so conspicuous a plant should have escaped recent observation. On the other, Mr. Drummond was a man on whose specimens much greater reliance may be placed than on those of most of the old collectors. *H. villosum* was also said to have been found by Don about Loch-na-gar; but without the corroboration of Mr. Drummond, little attention would now be paid to this statement, from his habit of sending out cultivated specimens, which he believed to be the same as some plant which he had seen growing wild, but which very often was really something quite different; such as *Potentilla tridentata*, sent by him, when the plant which he had seen was no doubt *Potentilla Sibbaldia*.

Scotland? Perennial. Autumn.

A very variable plant, the stems 4 to 18 inches high: when small and monocephalous, having somewhat the aspect of *H. holosericeum*, but when large and with numerous leaves and anthodes, unlike any of the other British species. The leaves vary very much in breadth and the anthodes in size, but the latter are generally large, and very handsome from the densely silky woolly pericline.

The drawing which is now given of this plant is taken from

the specimen in Smith's Herbarium; that originally given in "English Botany" as *H. villosum* represents *H. eximium*.

Shaggy Hawkweed.

French, *Epervière Velue.* German, *Zotiges Habichtskraut.*

GROUP E.—VULGATA (including *OREADEA*, *Fries*).

Plant glaucous, or sometimes green, with simple non-glandular hairs on the leaves and lower part of the stem. Radical leaves in a rosette, persistent until after flowering (in some forms of *H. vulgatum* decaying before flowering, or very shortly afterwards). Stem scape-like or sparingly leafy (rarely with numerous leaves in some forms of *H. vulgatum*). Phyllaries adpressed, with short hairs, and often white stellate down, with or without gland-tipped hairs. Ligules glabrous, or sometimes sub-ciliated at the apex. Achenes rather large, brownish-black.

SPECIES XVII.—**HIERACIUM PALLIDUM.** *Fries.*

PLATE DCCCXL.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXLIX.

Bach. Mon. Hier. p. 43. *Bab.* Man. Brit. Bot. ed. v. p. 203. *Hook. & Arn.* Brit. Fl. ed. viii. p. 223. *Fries*, Epic. p. 83.

H. Schmidtii, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 522. *Reich.* l. c.

Stem scape-like, corymbosely branched at the apex, glabrous, with a little stellate down and a few short black gland-tipped hairs on the upper part and peduncles. Radical leaves oval or elliptical-lanceolate, rather abruptly contracted into short sparingly-woolly petioles, acute or subacute (the outer ones sub-obtuse), remotely denticulate or dentate, especially towards the base, sub-glabrous, often ciliated with long rather stiff woolly hairs on the margins; stem frequently leafless, but usually with 1, more rarely 2 leaves, which are elliptical, shortly stalked or sessile, smaller and narrower than the radical leaves. Anthodes moderately large, 2 to 6, in a corymb. Pericline ovate at the base; phyllaries rather few, acuminate, the inner ones very acute, dark-olive, sparingly clothed with stellate down, especially at the margins, and with a few short black-based hairs and black gland-tipped hairs on the disk. Florets glabrous, except at the tips, where they are frequently faintly ciliated. Styles yellow. Plant very glaucous.

On rocks and by the sides of streams in mountainous districts.

Rather common. In Wales, the Lake district, Teesdale, and most of the hilly districts in Scotland, even as low as Salisbury Craigs, Edinburgh, and descending to a little above the level of the sea at the Waulk-mill Bay, Orphir, Orkney. It also occurs in Ireland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem 6 inches to 2 feet high, rather rigid, sometimes with a few white hairs at the base, and then nearly glabrous up to the point where it commences to branch, usually with a single leaf about the middle, or a little below it. Radical leaves generally tapering towards each end, generally denticulate or dentate towards the base, but sometimes with the teeth projecting considerably in the base and middle of the leaf, the terminal portion entire; petioles generally woolly, especially at the base. Anthodes commonly 3 or 4, but varying from 1 to 13, moderately large, considerably smaller than in any of the preceding *Pulmonarea*.

This plant, in its usual form, is very distinct from all the preceding, but some states rather closely resemble some of those of *H. Anglicum*. It has, however, the leaves smaller, usually narrower, and more abrupt at the base, and commonly more distinctly ciliated with long hairs at the margins; the stem is more slender and brittle, much more glabrous; the peduncles shorter and straighter; the phyllaries not nearly so dark, and the anthodes considerably smaller.

Pale Hawkweed.

German, *Blasses Habichtskraut*.

SPECIES XVIII.—*HIERACIUM CINERESCENS*. Jord.

PLATE DCCCXLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDLI.

Fries, Epic. p. 85. *Gr. & Godr. Fl. de Fr.* Vol. II. p. 370.

H. lasiophyllum, *Buck. Mon. Hier.* p. 45. *Bab. Man. Brit. Bot. ed. v.* p. 204.

Hook. & Arn. Brit. Fl. ed. viii. p. 224 (non *Koch*?).

Stem scape-like, corymbosely branched at the apex, sparingly clothed with long white hairs, and (especially in the upper part) stellate down, the upper part and peduncles with short black gland-tipped hairs. Radical leaves oval-oblong, abruptly contracted into short densely-woolly petioles, subacute (the outer ones obtuse), entire or denticulate, especially towards the base, rough with stellate down and sparingly clothed with long stiff woolly hairs on both sides, or at least below, and densely ciliated with the same on the margins; stem leafless, or with a single small strapshaped-lanceolate sessile bract-like leaf near the middle. Anthodes rather

small, 2 to 6, in a corymb. Pericline hemispherical at the base; phyllaries rather few, acute, dark-olive, with copious stellate down and a few long simple white or black-based hairs, and a small number of black gland-tipped hairs. Florets glabrous, not ciliated. Styles yellow. Plant ash-colour.

"In heathy alpine glens, at an elevation of 1,000 to 2,500 feet. Rare. Near Llyn Ogwen, Carnarvonshire; Craig-Breidden, Montgomeryshire; Glen Dole and ravine of the White Water, Clova Mountains, Forfarshire; near Castleton of Braemar, ravine descending from Ben-na-bourd, and Little Craigindal, Aberdeenshire" (Back. *l.c.*); "Rocks at Ronas Voe, Shetland (Mr. Tate); Ben Bulbin Sligo; and cliffs south of Glenarm" (Dr. Dickie).

England, Scotland, Ireland. Perennial. Autumn.

Stem 8 to 20 inches high, rigid. Radical leaves rounded at the base, the inner ones generally acute, the outer very blunt, often whitish below, from the abundance of stellate pubescence. Anthodes considerably smaller than those of *H. pallidum*. Leaves generally with long bulbous-based hairs on both sides and on the margin. Pericline greyish, from the abundance of white stellate down.

This species I have never collected, and of it I have seen but few specimens; but it seems quite distinct from *H. pallidum*, having more the habit of *H. murorum*, but differing from it in the harsh bulbous-based hairs, grey leaves clothed with copious stellate down, and the yellow styles.

H. lasiophyllum (Koch) is unknown to me except by description, and neither Mr. Backhouse nor Professor Babington appears to have seen authentic specimens. Fries, on the other hand, who has cultivated the *H. lasiophyllum* from seeds sent him by Koch, considers it distinct from *H. cinerescens*. All the authors quoted above agree that our plant is the *H. cinerescens* of Jordan, and it is identical with specimens I have received under that name from Piedmont (*Rostan*), Dauphiné (*Gariod*), but quite different from a plant from Lyons (*Martin*), though the nomenclature of the last is affirmed to be authenticated by M. Jordan himself.

[SPECIES XIX.—**HIERACIUM GIBSONI.** *Back.*

PLATE DCCCXLII.

Back. Mon. Hier. p. 47. *Bab.* Man. Brit. Bot. ed. v. p. 204. *Hook. & Arn.* Brit. Fl. ed. viii. p. 225. *Fries*, Epic. p. 96.

H. hypochaeroides, *S. Gibson*, in Phytol. Vol. I. p. 907.

Stem scape-like, corymbosely branched at the apex, very sparingly clothed with simple white hairs, the upper part and peduncles with stellate down and a few black gland-tipped hairs.

Radical leaves oval or oval-lanceolate, abruptly truncate or subcordate at the base, with rather short sparingly-woolly petioles, sub-obtuse (the outer ones obtuse), remotely repand-denticulate, or only callous-denticulate, sub-glabrous, ciliated with soft woolly hairs on the margins and midrib beneath; stem generally leafless, but sometimes with a small strapshaped bract-like leaf towards the base. Anthodes moderately large, 2 to 5, in a corymb. Pericline truncate at the base; phyllaries rather few, broad, sub-obtuse, dark-olive, sparingly clothed with stellate down and a few short black-based hairs and black gland-tipped hairs. Florets glabrous, not ciliated. Styles yellow. Plant intensely glaucous.

On limestone rocks and débris at the foot of Giggleswick and Gordale Scars, near Settle, Yorkshire.

England. Perennial. Summer and Autumn.

Stem ascending or erect, 6 to 18 inches high, generally slightly curved in the lower part, and usually purplish-red. Primary leaves very blunt, the lamina longer than the petiole and almost truncate at the base; inner leaves more or less acute (when numerous, the inner ones quite acute), all very glaucous and blotched or speckled with purple. Peduncles rigid, ascending. Anthodes about the size of those of *H. pallidum*, and much resembling them. Achenes as large as those of *H. pallidum*, and very similar.

Fries includes this species among his *vulgata*, on account of its soft hairs; but having cultivated for two years plants sent me by Mr. Tatham, of Settle, I have no doubt Mr. Backhouse is right in placing it near *H. pallidum*, to some of the forms of which it approaches in habit, though the hairs on the leaves are rather softer, and the phyllaries much broader and obtuse at the apex.

Cat's-ear Hawkweed.

SPECIES XX.—*HIERACIUM ARGENTUM*. Fries.

PLATE DCCCXLIII.

Duck. Mon. Hier. p. 49. *Bab. Man. Brit. Bot.* ed. v. p. 204. *Hook. & Arn. Brit. Fl.* ed. viii. p. 225. *Fries, Epic.* p. 86.

Stem scape-like, corymbosely branched at the apex, fistulose, glabrous, the upper part and peduncles very sparingly clothed with stellate down and a few short hairs, and a very few black gland-tipped hairs. Radical leaves strapshaped-elliptical, very gradually attenuated into short broadly-winged very sparingly-woolly petioles, acute, remotely dentate or callous-denticulate in the middle, glabrous, often with scattered rather soft woolly hairs

on the under side and margins ; stem-leaves 1 to 3, the lowest ones sessile and semi-amplexicaul, or subsessile, elliptical-strap-shaped, the upper ones usually bract-like. Anthodes rather large, 2 to 4, in a corymb, or more when the stem is branched from near the base. Pericline at length truncate below ; phyllaries rather numerous, rather broad, subacute, or the outer ones obtuse, dark-olive, very sparingly clothed with stellate down, especially towards the margins, and with a few simple white or black-based hairs and short black gland-tipped hairs. Florets glabrous, not ciliated. Styles yellow. Plant intensely glaucous.

In mountainous districts. At the foot of Snowden, North Wales ; Melbreak, near Crummock Water, and Great End, Cumberland ; Clova District ; Castleton of Braemar, and Craig Dhu-loch, Aberdeen ; Isle of Harris, in the Hebrides.

England, Scotland. Perennial. Late Summer and Autumn.

Stem 1 to 2 feet high. Radical leaves, or at least the inner ones, very long and narrow. Peduncles elongated, rigid. Buds cylindrical, with the ends of the phyllaries reflexed. This plant I have never gathered, and have seen but a single British specimen, which was collected in Glen Dole, Clova, by Dr. George Lawson.

Silvery Hawkweed.

SPECIES XXI.—*HIERACIUM NITIDUM*. *Back.*

PLATE DCCXLIV.

Back. Mon. Hier. p. 50. *Bab.* Man. Brit. Bot. ed. v. p. 204. *Hook. & Arn.* Brit. Fl. ed. viii. p. 225.

H. pallidum, persicifolium, Fries, Epic. p. 84.

Stem scape-like, corymbosely branched at the apex, wiry, glabrous, the upper part and peduncles with stellate down and gland-tipped hairs, and a few white simple hairs. Radical leaves elliptical or narrowly elliptical, gradually contracted into rather short slightly-winged and slightly-woolly petioles, very coarsely toothed in the lower half, acute or subacute, glabrous above, sparingly clothed with rather soft woolly hairs on the under side and margins ; stem with a single leaf, sub-petiolate when near the bottom of the stem, sessile when near the middle, narrower than the root-leaves, very acute, and coarsely dentate. Anthodes moderately large, 2 to 5, in a corymb, or more when the stem is branched from below the corymb. Pericline hemi-

spherical at the base; phyllaries rather few, rather broad, acute, dark-olive, rather thickly clothed with gland-tipped hairs, intermixed with simple black-based hairs and a little stellate down. Florets glabrous, ciliated at the apex. Styles yellow. Plant dark-green.

On rocky margins of alpine streamlets, at an elevation of 1,500 to 2,500 feet. Rare. Side of the stream issuing from the Corrie of Ben-na-bourd and eastern side of Cairntowl, Braemar.

Scotland. Perennial. Autumn.

Stem 15 to 24 inches high, the leaves resembling in shape those of *H. argenteum*, but broader and shorter, much more strongly toothed, with the teeth pointing outwards or forwards, on longer and more distinct petioles, and not at all glaucous. Anthodes smaller than in *H. argenteum*, on shorter peduncles. Phyllaries with much less stellate down and with the points more acute.

H. nitidum appears to approximate most nearly to *H. pallidum*, differing in the more strongly toothed and narrower dark-green leaves, acute at each end, scarcely ciliated at the margins. Fries quotes it doubtfully under *H. pallidum*, as a form of *persicifolium*.

Mr. Backhouse gives as one of the characters, that the peduncles are scaly; but in two specimens from Ben-na-bourd with which I have been favoured by that gentleman, these are no more so than in many specimens of *H. pallidum* and *H. argenteum*, and less so than in *H. cinarescens* and *H. Gibsoni*. In fact in this group the presence or absence of small scale-like bracts on the peduncles appears to be of very little value as a specific character.

Scaly-stalked Hawkweed.

SPECIES XXII.—**HIERACIUM AGGREGATUM.** *Back.*

PLATE DCCCXLV.

Back. Mon. Hier. p. 52. Bab. Man. Brit. Bot. ed. v. p. 205. Hook. & Arn. Brit. Fl. ed. viii. p. 228.

Stem scape-like, sub-umbellately branched at the apex, sparingly clothed with stellate down, without simple or gland-tipped hairs even on the peduncles. Radical leaves ovate-elliptical, abruptly contracted at the base into short woolly petioles, subacute, the outer ones obtuse, coarsely dentate on the lower half and often with a few very large slender teeth at the very base, glabrous above, frequently with scattered rather soft woolly hairs beneath and on the margins; stem leafless or with a single small subsessile leaf clothed with stellate down beneath, unless the leaf is

near the base. Anthodes rather small, 3 to 17, in an umbellate corymb with the peduncles erect. Pericline ovate at the base; phyllaries few, obtuse, olive-green, rather sparingly clothed with stellate down, intermixed with a few short black simple and gland-tipped hairs. Florets glabrous. Styles yellow. Plant dull-green.

Margins of alpine streamlets at an elevation of 2,500 to 3,000 feet. Rare. Cairntowl, Little Craignidale, and cliffs above the Dhuloch, Braemar.

Scotland. Perennial. Autumn.

Stem 12 to 20 inches high, rather rigid, terminated by a number of elongated peduncles springing from nearly the same point, so that the anthodes are sub-umbellate and closely packed together, which is the chief point of difference between this species and *H. murorum*, although the papillæ on the style are usually yellow, while in *H. murorum* they are dark, so as to give the style a livid appearance; but Mr. Backhouse says that the styles even in *H. aggregatum* are sometimes clothed with a few minute darker hairs. I have never gathered it.

According to Mr. Backhouse, Dr. Grenier refers *H. aggregatum* to *H. bifidum* (*Kitabel*), a species which I have not seen, and the descriptions of it do not mention the peculiar umbellate arrangement of the anthodes.

Compact Hawkweed.

SPECIES XXIII.—**HIERACIUM MURORUM.** *Fries.*

PLATE DCCCXLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXIX. MDXX.

Back. Mon. Hier. p. 54. Bab. Man. Brit. Bot. ed. v. p. 205. Hook. & Arn. Brit. Fl. ed. viii. p. 226.

"*H. murorum, β sylvaticum, Linn.*" (*Fries, Epic. p. 91.*)

Stem scape-like, corymbosely branched at the apex, subglabrous below or sparingly clothed with stellate down and white simple soft woolly hairs, the upper part more densely so, and, as well as the peduncles, with numerous rather long scattered black gland-tipped hairs. Radical leaves rather thin, oval or ovate or ovate-oblong, usually truncate or sub-cordate at the base, not attenuated into the moderately long woolly petioles, obtuse or acute, denticulate or more or less strongly toothed, often with sharp spreading or runcinate teeth towards the base, with soft hairs on both sides, or glabrous above, destitute of stellate down; stem usually with only 1 leaf, more rarely with 2, 3, or more,

which are much smaller than the root-leaves, the lowest one distinctly stalked. Anthodes small, 5 to 15, in a compact corymb, with the peduncles short and arching-ascending. Pericline ovate at the base, oblong-cylindrical after flowering; phyllaries numerous, acute, the inner ones acuminate, dark-olive, sparingly clothed with stellate down and black gland-tipped setæ, or occasionally with white simple hairs. Florets glabrous or indistinctly ciliated. Styles livid-yellow. Plant green or slightly cæsius.

Var. α , *genuinum*.

Phyllaries densely clothed with black gland-tipped hairs. Leaves green.

Var. β , *canescens*.

Phyllaries without gland-tipped hairs, but with numerous white simple hairs. Leaves green.

Var. γ , *sub-cæsius*, Fries?

Phyllaries nearly destitute of gland-tipped hairs, but with numerous simple white or white-tipped hairs. Leaves glaucous, the one on the stem small and sessile.

On rocks and walls. Common in mountainous districts; rare and rather sparingly distributed on low ground. Var. β , on limestone rocks, near Knaresborough, Yorkshire; var. γ , on the walls of Fountains Abbey, near Ripon, Yorkshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem 9 inches to 2 feet high. Leaves very variable in form, but generally abrupt or even sub-cordate at the base; in the most common form the stem has a single-stalked leaf about or below the middle, but frequently there is a smaller sessile one above, and nearly as commonly no leaf at all, or a small bract-like one above the middle; the margins are usually remotely denticulate or dentate, the teeth increasing in size towards the base, and pointing outwards or backwards.

Mr. Backhouse gives a variety *rotundatum* found in Canlochen Glen, but I am unable to see the characters which separate it from the ordinary form.

Mr. Baker has favoured me with two plants from his garden, which represent my varieties β and γ . Both of these are destitute of the black gland-tipped hairs which form a conspicuous character in the ordinary state of *H. murorum*. The first of these he con-

siders exactly Fries's plant ; but Fries distinctly says, "Involucro sub-nuda, nigra-glandulosa pilosa," which does not apply to the Knaresborough plant.

The variety γ , Mr. Baker considers an intermediate form between *H. murorum* and *H. cæsium*, agreeing with the former in habit and in the size and shape of the heads : with the latter in the mature leaves becoming glaucous and sub-coriaceous, and the stem-leaf being much reduced and sessile.

A plant from the foot of Glen Esk, collected by Mr. Croall, which Mr. Backhouse refers to *H. murorum*, has the heads sub-umbellate, the stem and leaves densely woolly, and the pericline sub-globular after flowering. I should have referred it rather to *H. cæsium*.

Wall Hawkweed.

French, *Epervière des Murs.* German, *Mauer Habichtskraut.*

SPECIES XXIV.—**HIERACIUM CÆSIUM.** *Fries* (?).

PLATE DCCCXLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXXIV. Fig. 2.

Buck. Mon. Hier. p. 56. *Bab.* Man. Brit. Bot. ed. v. p. 205. *Hook. & Arn.* Brit. Fl. ed. viii. p. 227. *Fries*, Epic. p. 92 (?).

"*H. murorum*, var. α , *Linn.* Sp. Plant. p. 1128." *Fries*.

H. murorum, *Sm.* Eng. Bot. No. 2082.

Stem scape-like, corymbosely branched at the apex, sub-glabrous below, above and on the peduncles, rather densely clothed with stellate down intermixed with a few simple black-based hairs, and sometimes a very few gland-tipped hairs. Radical leaves sub-coriaceous, oblong-oval or oval, or oblong-lanceolate, more or less abruptly attenuated into short woolly petioles, sub-obtuse or acute, remotely denticulate or dentate, especially towards the base where the teeth are often large, with soft hairs on both sides or only beneath, without stellate down ; stem leafless or with a single leaf, which is usually above the middle of the stem, very small, sessile, and bract-like. Anthodes rather large, 3 to 7, in a lax corymb, with the peduncles elongate, ascending, usually nearly straight. Pericline hemispherical at the base, ovate-ovoid after flowering ; phyllaries numerous, acute, the outer ones sub-obtuse, dark-olive, densely clothed (especially towards the margins) with stellate down intermixed with more or less numerous white or white-tipped hairs, but with very few or no black gland-tipped hairs. Florets sub-glabrous, not ciliated. Styles livid-yellow. Plant glaucous.

Var. *α*, *genuinum*.

Radical leaves generally attenuated towards the base, sub-acute, dentate; petioles slightly woolly; stem-leaf very small and sessile, or none. Florets bright-yellow.

Var. *β*, *obtusifolium*.

H. obtusifolium, *Back. Mon. Hier.* p. 58.

First radical leaves rounded at both extremities, nearly or quite entire; petioles very short and shaggy; stem-leaf rather large, shortly stalked. Florets pale-yellow.

On rocks chiefly in mountainous districts, but apparently much less abundant than *H. murorum*. The specimens in Mr. H. C. Watson's Herbarium and my own are from near Settle and Hawnby, Yorkshire; Kirkstone, Northumberland; Braemar, Aberdeenshire; and Durness, Sutherland. Mr. Backhouse considers that a plant from Hoy Hill, Orkney, belongs to this species; but the specimens are too immature to enable us with certainty to extend the range so far North.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stem 9 to 18 inches high. Leaves thicker in texture, more glaucous, more attenuated into the petiole than in *H. murorum*, which it very much resembles. Anthodes fewer and considerably larger, with more stellate down and white hairs, and fewer gland-tipped hairs than in the ordinary state of *H. murorum*. The pericline is much broader and not cylindrical when in fruit. The softer hairs, reduced stem-leaves, whiter phyllaries, and yellow styles, distinguish it from *H. pallidum* and *nigrescens*. Fries says of *H. cæsium*, "*Folia radicalia * * * subtus stellato-floccosa*;" but the British plant has no stellate down on the under side of the leaves. Is it the same as Fries's plant?

H. obtusifolium I have never seen: Professor Babington refers it to *H. cæsium*.

Cæsious Hawkweed.

German, *Bläuliches Habichtskraut*.

SPECIES XXV.—**HIERACIUM FLOCCULOSUM.** *Back.*

PLATE DCCCXLVIII

Back. Mon. Hier. p. 60.

H. floccosum, *Bab. Man. Brit. Bot. ed. v.* p. 205.

H. stelligerum, *Back. Mon. Hier.* p. 59. *Hook. & Arn. Brit. Fl.* p. 227 (non *Frül.*).

H. cæsium, *Fries, Epic.* p. 92.

Stem scape-like, corymbosely branched at the apex, sparingly clothed with stellate down, the peduncles rather densely so and with scattered black gland-tipped hairs. Radical leaves subcoriaceous, oval, rather abruptly attenuated at the base into rather long slender woolly petioles, sub-acute or sub-obtuse, denticulate or dentate, with sharp spreading teeth towards the base, clothed with very minute stellate down, especially beneath and when young; stem with 1 or 2, rarely 3 leaves, the lowest one rather large, sub-petiolate, with the indistinct petiole winged and semi-amplexicaul; upper ones much smaller and sessile. Anthodes moderately large, 2 to 7, in a lax sub-racemose (?) corymb. Peduncles elongate, ascending, usually slightly curved. Pericline ovoid at the base; phyllaries numerous, acuminate, dark-olive, sparingly clothed with white-tipped hairs, and a few black gland-tipped hairs. Florets sub-glabrous, not ciliated. Styles livid-yellow. Plant ashy-green.

On the margins of alpine streamlets, at an elevation of 1,500 to 3,000 feet. Rare. Eastern side of Cairntowl and higher part of Glen Dee, cliffs near the Dhuloch and Loch-na-nean, Aberdeenshire; near the Kirktown of Clova, Forfarshire.

Scotland. Perennial. Autumn.

I have never collected this plant, nor seen it in a living state, but have a specimen gathered by Mr. Backhouse on the cliffs above the Dhuloch. This is about 16 inches high, but Mr. Backhouse says it varies from 18 inches to 2 feet. The radical leaves in my specimen are few, with the lamina about equal to the petiole, regularly oval at each end, and remotely denticulate, with the teeth terminated by callous projections; the lower stem-leaf is oval-elliptical, nearly as large as the radical leaves, and beneath the middle of the stem; the upper stem-leaf is lanceolate and much smaller; all the leaves are stellately furfuraceous on both sides. The anthodes are 4 in number, sub-racemose, considerably smaller than those of *H. caesium*, but rather larger than those of *H. murosorum*; the phyllaries shorter than in *H. caesium*, nearly destitute of stellate down, but with many more short black-based hairs intermixed with a few gland-tipped ones.

Fries quotes this under *H. caesium*, with a mark of admiration to indicate that he has seen specimens; but it is certainly quite distinct from the plant called *H. caesium* by British botanists, although he also quotes *H. caesium* of Backhouse's British *Hieracia* with a mark of admiration: besides this he mentions that his *H. caesium* has the leaves with stellate down beneath, while all the

specimens named *H. cæsius* by Mr. Backhouse which I have seen, have no stellate down.

Stellately-downy Hawkweed.

SPECIES XXVI.—**HIERACIUM MACULATUM.** *Sm.*

PLATE DCCCXLIX.

Sm. Eng. Bot. No. 2121 ; Brit. Fl. Vol. III. p. 360.

H. vulgatum, var. *nemorosum*, *Back. Mon. Hier. p. 63 !*

"*H. inquinatum*, *Jord.*" *C. H. Schultz, MS.*

Stem scape-like or sparingly leafy, corymbosely branched at the apex, sparingly clothed with stellate down and a few simple white hairs, the upper part densely stellately-downy with a few black gland-tipped hairs. Primary radical leaves broadly oval-spathulate, abruptly attenuated into short winged slightly-woolly petioles, obtuse, entire or denticulate ; the later ones oval-elliptical or elliptical-ovate, rather abruptly attenuated into long woolly petioles, subacute, denticulate, or strongly serrate-dentate, sometimes with a few long teeth in the basal half curving forward, sub-coriaceous, sparingly clothed above and on the margins with coarse bulbous-based hairs and occasionally a few stellate hairs, beneath with slender soft hairs and a very little down ; stem-leaves 1 to 4, the lowest one resembling the radical leaves, but smaller, with a shorter petiole and more acute, the upper ones smaller and sub-sessile, the uppermost sessile. Anthodes rather small, usually numerous, in a lax corymb, with the peduncles short, ascending-spreading, usually nearly straight. Pericline ovoid at the base, conical-oblong-cylindrical after flowering ; phyllaries numerous, subacute, olive with pale edges, clothed with stellate down, especially on the margins, and numerous short black gland-tipped hairs. Florets sub-glabrous, not ciliated. Styles livid-yellow. Plant dark-green, with the leaves always blotched with purplish-black.

On old walls and dry banks, but very doubtfully native. There are only cultivated specimens in Smith's Herbarium from Mr. Crowe's garden, the original root of which was said to be brought from Westmoreland, and he states that the plant is naturalized about Norwich. I have gathered it at Sydenham and on the bank surrounding a small garden on Wimbledon Common. I have received it from Plymouth, collected by Mr. Briggs, and from Arbury Hall, Warwickshire, by Mr. T. Kirk : there are

specimens in Mr. Borrer's Herbarium at Kew, from Bath, and from the walls of Chichester.

England. Perennial. Autumn.

Stem 1 to 3 feet high, hollow. Primary radical leaves small, secondary ones larger and more acute, all marbled with purplish-black, harsh on the upper surface from the stiffness of the hairs, and frequently with a few stellate hairs. Anthodes about the size of those of *H. murorum*, from which the plant chiefly differs in having the base of the leaves more or less attenuated into the petioles, the lamina narrower, the teeth pointing forwards, the hairs on the upper surface much coarser and distinctly bulbous-based, the texture thicker, the upper part of the stem, peduncles, and phyllaries with more stellate down, and the pericline more contracted towards the top after flowering.

Smith appears to have confounded with the plant he has described as *H. maculatum*, spotted varieties of *H. pallidum*: the Craig Breidden plant mentioned by him no doubt belonging to that species. Mr. James Bladon, in an article on *H. maculatum*, in "Phytol." Ser. I. Vol. I. p. 934, has totally misapprehended Smith's species, evidently mistaking for it a form of *H. vulgatum* with a very leafy stem and evanescent root-leaves, as is shown by his specimens; this is an error in which, strange to say, he has been followed by Mr. Backhouse and Professor Babington. Mr. Backhouse names specimens of the *H. maculatum* of "English Botany" and of Smith's Herbarium (with which the description in the "English Flora" agrees)—"*H. sylvaticum*, var. *nemorosum*."

H. maculatum can be considered distinct from *H. vulgatum* only as a sub-species, but it comes up true from seed: it has been cultivated by Mr. H. C. Watson for a long period, and I have myself raised it from seed for several years, without its undergoing any alteration, so that it deserves quite as well to be kept distinct as many of the species separated by Mr. Backhouse.

Spotted Hawkweed.

SPECIES XXVII.—**HIERACIUM VULGATUM.** *Fries.*

PLATE DCCCL.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tabs. MDXXVI. MDXXVII. Fig. 1.

Back. Mon. Hier. p. 61. *Bab.* Man. Brit. Bot. ed. v. p. 206. *Fries*, Sum. Veg. Scand. p. 98.

H. sylvaticum, *Sm.* Eng. Bot. No. 2031. *Hook. & Arn.* Brit. Fl. ed. viii. p. 228.

Gr. & Godr. Fl. de Fr. Vol. II. p. 375.

Stem scape-like or leafy, corymbosely or paniculato-corymbosely branched at the apex, sub-glabrous or clothed with soft woolly hairs towards the base, with more or less stellate down in the upper part and on the peduncles, and the latter sometimes

with a few black gland-tipped hairs. Radical leaves varying from oblong-elliptical or oblong-lanceolate to ovate, attenuated into rather short woolly petioles, subacute, or the primary ones obtuse, entire or denticulate or serrate-dentate, sometimes with a few large teeth pointing forwards, glabrous or with coarse hairs above and soft ones beneath; stem-leaves 1 to 12, the lower ones resembling the root-leaves and nearly as large, shortly stalked; the upper ones smaller and sessile, sometimes bract-like. Anthodes rather small or moderately large, usually numerous, in a corymb or corymbose-topped panicle, on straight usually short ascending-spreading peduncles. Pericline ovoid at the base, conical-oblong-cylindrical after flowering; phyllaries numerous, subacute, olive-green or dark olive, with pale edges, thinly clothed with stellate down sparingly intermingled with black-based hairs and black gland-tipped hairs. Florets glabrous, not ciliated at the apex. Styles livid-yellow. Plant green or caesious.

Var. *α*, *genuinum*.

Stem-leaves numerous and, as well as the root-leaves, subcoriaceous. Anthodes rather small. Phyllaries with numerous gland-tipped hairs.

Var. *β*, *rosulatum*.

Leaves thin, chiefly in a radical rosette; stem-leaves few (1 to 3). Anthodes rather small, with numerous black-based hairs and few gland-tipped hairs.

Var. *γ*, *cinereum*. Back.

“Ashy-green or glaucous. Stem short, with few sub-entire leaves, much branched. Root-leaves few, obovate-lanceolate. Involucres (pericline) nearly destitute of glands. Phyllaries broad, more obtuse.”

Var. *δ*, *rufescens*. Back.

“Green. Stem robust, purplish-red. Leaves ovate; root-leaves numerous; stem-leaves few, 1 or 2, sub-sessile or slightly clasping; heads large, few. Phyllaries broad, sub-acuminate.”

Var. *ε*, *sub-nigrescens*.

Radical leaves oblong-elliptical, abruptly attenuated into the petiole, or sub-truncate at the base, subacute, sparingly toothed; stem-leaves 1 or 2, small. Anthodes rather large. Phyllaries nearly

black, destitute of stellate pubescence, with short black or black-based hairs and a few gland-tipped hairs.

Var. α , common in bushy places, hedgebanks, and open woods throughout England. Var. β , on rocks in mountainous districts in England, and on rocks and by roadsides and in bushy plains in Scotland, where it seems to replace the preceding form. Var. γ , Great Ormes Head, North Wales (Backhouse). Var. δ , Giggleswick and Gordale Sears, near Settle (Backhouse). Var. ϵ , on Highland mountains, rather rare.

England, Scotland, Ireland. Perennial. Autumn.

A very variable plant, of which the forms, however, are so connected together and change so much in cultivation that it is difficult to believe them distinct. The form most common in England has the stem 1 to 3 feet high, and the stem-leaves numerous, rarely fewer than 3 or 4 in fully developed specimens, and sometimes exceeding that number; in the latter case approaching *H. tridentatum* in habit. The leaves of this form are usually distinctly serrately toothed in the lower half and of tolerably firm consistence, with rough hairs on the upper surface and soft ones beneath; rather bright-green, rarely spotted with black, less harsh to the touch than those of *H. maculatum*, with the stem-leaves more numerous and usually more strongly toothed, and with the teeth, when large, not curving so much forwards and less abrupt at the base; the stem tougher and more flexuous; and the phyllaries more gradually attenuated towards the apex.

Var. β has the stem 6 to 20 inches high, and the stem-leaves few, sometimes reduced to a single bract-like one, but more usually with one large one near the base, and sometimes a second in the upper part; the apex of the radical leaves generally rather blunt, the teeth more slender than in var. α , the texture much more membranous, the upper face often, and the under surface frequently sub-glabrous, the latter often purple; the anthodes fewer, on longer peduncles.

Vars. γ and δ I have never seen, and have transcribed Mr. Backhouse's characters.

Var. ϵ shows an approach to *H. nigrescens* in the blackness of the heads: the stem-leaves in this form are often small or bract-like; the anthodes are fewer and considerably larger than in vars. α and β ; under cultivation it approximates to var. β .

The teeth of the leaves pointing forwards instead of outwards or even backwards, distinguish all the forms of *H. vulgatum* from *H. murorum* and *H. ciliatum*; the livid styles from *H. pallidum*, which some states of it resemble.

Wood Hawkweed.

German, *Gemeines Habichtskraut.*

GROUP F.—PSEUDO-ACCIPITRINA (*Pseudo-pulmonaria*, Fries).

Plant slightly glaucous, sub-glabrous, or sparingly hairy, with simple non-glandular hairs. Radical leaves in an imperfect rosette, rarely surviving the winter, and almost always decayed by the time of flowering; sometimes absent. Stem-leaves numerous; the lower ones sub-petiolate, the upper sessile, not amplexicaul. Phyllaries irregularly imbricated, sub-glabrous or sparingly clothed with short hairs, more rarely with stellate down, nearly or entirely destitute of black gland-tipped hairs. Achenes rather large, brownish-black.

SPECIES XXVIII.—**HIERACIUM GOTHICUM.** *Fries.*

PLATE DCCCLI.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXXVII. Fig. 2.

Bach. Mon. Hier. p. 64. *Bab. Man. Brit. Bot.* ed. v. p. 206. *Hook. & Arn. Brit. Fl.* ed. viii. p. 228.

Stem leafy, corymbosely or paniculato-corymbosely branched at the apex, sub-glabrous or sparingly clothed with long simple hairs; the upper part and peduncles with a little stellate down and a few black gland-tipped hairs. Radical leaves usually decayed before flowering; stem-leaves several or numerous, variable in breadth, some of them occasionally aggregated near the base, forming a pseudo-rosette; lower ones elliptical or oval, attenuated at the base and petiolate; intermediate ones strapshaped-elliptical or oval-elliptical, narrowed towards the base and apex; upper ones sessile, not amplexicaul, lanceolate acute; all more or less coarsely serrate towards the middle, with the teeth distant and often elongated, entire at the apex, sub-glabrous above, frequently sparingly hairy beneath, or only ciliated at the margins and on the midrib beneath. Anthodes rather large, usually few (3 to 5) in a corymb, or numerous in a corymbose-topped panicle, on straight stout elongated ascending or erect peduncles. Pericline hemispherical at the base, ovate-conical after flowering; phyllaries numerous, obtuse, the inner ones narrower, dark olive-green, nearly glabrous, or with a few short gland-tipped or simple whitish hairs on the middle line, sometimes with a little stellate down towards the base. Florets glabrous, not ciliated at the apex. Styles livid-yellow or yellow.

Var. α , *genuinum*.

Stem slender, with several or numerous leaves. Leaves strap-shaped-elliptical or elliptical; radical leaves withering before flowering. Anthodes rather large. Styles livid-yellow.

Var. β , *latifolium*. Back.

Stem stout, with few leaves. Leaves broadly elliptical or oval-elliptical, those in the middle attenuated towards each end; radical leaves sub-persistent. Anthodes large. Styles pure yellow.

On heathy and grassy plains. In sub-alpine districts. In Wales, on Cader Idris, Snowden, and about Llanberis; Teesdale, Yorkshire; Clova and Braemar, Scotland. Var. β , heathy hillocks, near Kirktown of Clova; Connemara and Carrickfergus, Ireland.

England, Scotland, Ireland. Perennial. Autumn.

Apparently a very variable plant, with which I have but an imperfect acquaintance, having seen but few specimens. Stem 1 to 4 feet high, erect, rigid, in var. α with numerous narrow leaves. Anthodes large. Phyllaries obtuse, nearly glabrous, but usually with a line of short white or white-tipped hairs in the middle of each, or sometimes gland-tipped hairs.

Fries makes the chief difference between his *H. Gothicum* and *H. Norvegicum* consist in the former having gland-tipped hairs on the blackish-green sub-glabrous phyllaries, while the latter has glandless white hairs on its pale stellately-downy phyllaries. We appear to have both plants, but the glandular phyllaries do not always occur on the narrow-leaved plants, nor are the glandless hairs confined to the broad-leaved forms; so that the latter cannot belong to *H. Norvegicum* of Fries, as suspected by Professor Babington. Were it not for the differences of a similar nature which occur between different forms of *H. vulgatum*, I could hardly have believed that the var. *latifolium* could be properly united with the ordinary state of *H. Gothicum*.

All the forms of *H. Gothicum* seem to be distinguishable from those of *H. vulgatum* with leafy stems by the larger anthodes and the sub-glabrous pericline with blunt phyllaries.

I must confess that I do not well understand the limits assigned to *H. Gothicum* by Mr. Backhouse: some of the specimens in Mr. H. C. Watson's Herbarium and in my own, which have been named *H. Gothicum* by Mr. Backhouse, I should have called *H. vulgatum*, others *H. boreale*.

Naked-headed Hawkweed.

SPECIES XXIX.—**HIERACIUM TRIDENTATUM.** *Fries.*

PLATE DCCCLII.

*Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXXXI.**Back. Mon. Hier. p. 67. Bab. Man. Brit. Bot. ed. v. p. 206. Hook. & Arn. Brit. Fl. ed. viii. p. 229. Fries, Epic. p. 116.**"H. rigidum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 530. Reich. l. c. (non Hartm.)," Fries.*

Stem leafy, corymbosely or paniculato-corymbosely branched at the apex, sparingly hairy with simple woolly hairs below, sub-glabrous in the middle, puberulent with stellate down on the upper part and peduncles; the latter with a few black-based hairs, but few or no gland-tipped hairs. Radical leaves always decayed by the time of flowering, but sometimes there is a small lateral tuft which simulates a radical rosette; lowest leaves elliptical-oblancoate, petiolate; intermediate ones elliptical, attenuated at both ends; uppermost ones sessile, not amplexicaul, lanceolate, attenuated towards the apex, acute, all more or less strongly serrate towards the middle, with the teeth very distant and elongated, entire at the apex, sub-glabrous above, generally slightly hairy beneath and on the margins, woolly on the midrib beneath as well as on the petioles of the leaves. Anthodes rather small, usually numerous, in a corymb or corymbose-topped panicle, on straight rather short slender erect or ascending pedicels. Pericline truncate at the base, conical after flowering; phyllaries numerous, sub-obtuse, inner ones narrower, olive, nearly glabrous, with a few short simple black or white-tipped hairs mostly along the middle line, occasionally with a few gland-tipped hairs and sometimes a little stellate down towards the base. Florets glabrous, not ciliated towards the apex. Styles livid.

In hedgebanks and margins of woods. Rather common, and generally distributed in England; apparently rare in Scotland, where I have never gathered it; but Professor Babington gives it as occurring both in Scotland and Ireland. Mr. H. C. Watson doubts its existence in Scotland.

England, Scotland (?), Ireland. Perennial. Autumn.

Stem erect, slightly flexuous, 18 inches to 5 feet high, usually distinctly hairy below. Leaves much resembling the stem-leaves of *H. vulgatum*, but more strongly toothed towards the middle and with the lateral veins curving round more, so as to run for some dis-

tance nearly parallel to the margins of the leaf. Anthodes about the size of those of *H. vulgatum*.

From the usual states of *H. vulgatum*, the absence of a rosette and the numerous stem-leaves sufficiently distinguish it. It differs from the more leafy forms in the anthodes being on longer and more slender pedicels; the pericline more abrupt at the base; the phyllaries broader and blunter, more glabrous, usually quite destitute of gland-tipped hairs and stellate down, except sometimes at the very base.

From *H. Gothicum*, which it sometimes closely resembles, it differs in being of a brighter green and more hairy, especially on the lower part of the stem, petioles, and midribs of the leaves beneath. The pedicels are more slender and shorter; the anthodes much smaller and more numerous; the pericline less rounded at the base; the phyllaries paler and with more numerous hairs; the achenes smaller; the pappus more tinged with brown: and the true root-leaves, even when present in winter, always decay before spring.

Three-toothed Hawkweed.

German, *Starres Habichtskraut*.

SECTION III.—ACCIPITRINA.

Rootstock not stoloniferous. Radical leaves none, the rootstock producing a bud which develops into a leafy stem, but never into a rosette; stem with numerous leaves, the lower ones withering before the flower expands. Phyllaries irregularly imbricated, or in 2 series with but few in the outer one. Achenes rather large, not crenulated at the apex. Pappus of unequal brittle rigid hairs.

GROUP A.—UMBELLATA.

Stem leafy, without a basal rosette, umbellato-corymbosely branched at the apex. Stem-leaves narrowed and not amplexicaul at the base, paler (but not glaucous) beneath, and with the network formed by the ultimate veins inconspicuous. Phyllaries numerous, imbricated in several rows, sub-glabrous, destitute of gland-tipped hairs, the outer ones squarrose at the tips. Achenes chestnut-black when ripe.

SPECIES XXX.—*HIERACIUM UMBELLATUM*. Vill.

PLATE DCCCLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tabs. MDXXXIII. MDXXXIV.

Buck. Mon. Hier. p. 72. *Bab. Man. Brit. Bot.* ed. v. p. 207. *Hook. & Arn. Brit. Fl.* ed. viii. p. 231. *Fries, Epic.* p. 135.

Stem very leafy, umbellato-corymbosely or sub-paniculately branched at the apex, sparingly clothed with stellate down, especially in the upper part, and sometimes with woolly simple hairs below; peduncles rather densely clothed with stellate down, but without simple or gland-tipped hairs. Leaves very numerous, crowded in the lower part of the stem, strapshaped-elliptical or elliptical or strapshaped; the lower ones gradually narrowed at the base but scarcely petiolate, the rest sessile, abruptly narrowed at the base, not at all amplexicaul, acute; all sub-entire or remotely denticulate or dentate-serrate in the middle, green on both sides, glabrous or puberulent above, clothed beneath with stellate hairs, frequently intermingled with a few simple woolly hairs, especially on the veins, shortly ciliated at the margins. Anthodes rather large, in an umbellate corymb or short panicle terminated by such a corymb, with slender erect pedicels bearing minute bracts which pass gradually into the outer phyllaries. Pericline subtruncate at the base; phyllaries numerous, broad, sub-obtuse, all except the innermost (which are broader and more obtuse), with the points recurved, olive, nearly glabrous, with a little stellate down towards the base, and sometimes along the middle line, but no woolly hairs or gland-tipped hairs. Ligules glabrous, not ciliated at the apex. Styles yellow. Achenes chestnut-black.

In heathy places and open woods, and thickets and hedgebanks, and rocky places, in mountainous districts. Frequent in England, rare in Scotland, where I have never collected it; but Mr. H. C. Watson, in the supplement to the "Cybele Britannica," gives it as an inhabitant of many of the south and west districts of Scotland.

England, Scotland, Ireland. Perennial. Autumn.

Stem 1 to 4 feet high, wiry, with numerous usually narrow leaves, varying considerably in breadth, but generally narrower than those of any other British species, rather rigid, usually sub-glabrous, sparingly sprinkled with stellate hairs, commonly with a few small teeth towards the middle, especially in the intermediate leaves; the lowest ones decayed by the time the flowers expand; the uppermost ones rather distant, broader in proportion, shorter, and more approaching to lanceolate in form. Anthodes in an umbellate corymb at the apex of the stem, in luxuriant examples with numerous branches terminated by one or more anthodes below the terminal corymb, so as to form a panicle. Pericline remarkable for the squarrose tips of the nearly glabrous phyllaries;

a character by which the species may be readily known in all its forms.

Mr. Backhouse gives a variety (β filifolium) characterized by having the leaves very narrow and with revolute margins, but this I have not seen.

Narrow-leaved Hawkweed.

French, *Epervière en Ombelle.* German, *Doldiges Habichtskraut.*

GROUP B.—SABAUDA.

Stem leafy, without a basal rosette, paniculato-corymbosely or sub-racemoso-corymbosely branched at the apex. Lower stem-leaves narrowed at the base; upper ones broad, sessile, not amplexicaul at the base, all paler (but not glaucous) beneath and with the network formed by the ultimate veins inconspicuous. Phyllaries numerous, imbricated in several rows, concolorous, dark-olive, sparingly hairy, nearly or wholly destitute of gland-tipped hairs, none of them squarrose at the points. Achenes chestnut-black when ripe.

SPECIES XXXI.—**HIERACIUM BOREALE.** *Fries.*

PLATE DCCCLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDXLI.

Back Mon. Hier. p. 75. Bab. Man. Brit. Bot. ed. v. p. 208 Hook. & Arn. Brit. Fl. ed. viii. p. 232. Fries, Epic. p. 130.

II. Sabaudum, *Sm. Eng. Bot. No. 349 (non Linn.).*

II. heterophyllum, *Bludon, in Phyt. ser. i. Vol. II. p. 961.*

Stem very leafy, paniculato- or racemoso-corymbosely branched at the apex, generally woolly in the lower part, sparingly clothed with stellate down and simple woolly hairs in the upper part; peduncles rather densely clothed with stellate down, sometimes intermixed with hairs which are often black-based but not gland-tipped. Leaves very numerous, commonly crowded in the lower part of the stem; the lowest ones elliptical- or oval-ob lanceolate; middle ones elliptical or oval and attenuated at each end; the upper ones ovate or ovate-lanceolate or lanceolate, broad or even sub-cordate, but not amplexicaul at the base; all (except the lowest) acute, remotely denticulate-serrate or dentate-serrate towards the middle, more or less hairy with soft hairs on both sides and especially on the veins beneath, ciliated with rather long hairs on the margins. Anthodes moderately large, numerous, in a corymb or short panicle or raceme terminated by the corymb, with

slender erect pedicels with minute bracts passing gradually into the outer phyllaries. Pericline ovate at the base ; phyllaries numerous, broad, sub-obtuse, the inner ones broader and more obtuse, without recurved tips, dark olive, concolorous, sub-glabrous with a few scattered pale hairs and sometimes a few gland-tipped ones, finely and very shortly ciliated at the margins. Ligules glabrous, not ciliated at the apex. Styles livid or brown. Achenes chestnut-black.

In hedgebanks, thickets, and open places in woods. Not uncommon in England ; rare in Scotland, where I have it only from the neighbourhood of Cramond Bridge, near Edinburgh ; but Mr. Watson records its occurrence in many of the southern and midland counties of Scotland.

England, Scotland, Ireland. Perennial. Autumn.

Stem 18 inches to 4 feet high, erect, rigid, often purplish, more or less hairy, with long hairs in the lower part, very sparingly so above, and there these hairs are intermingled with minute stellate down. Leaves variable in breadth, in some of the narrow-leaved states somewhat resembling those of *H. Gothicum*, or the broad-leaved forms of *H. umbellatum*.

From *H. umbellatum* it is always easily distinguished by the smaller and less umbellate anthodes and the phyllaries not reflexed at the points.

From *H. Gothicum* it differs by the constant absence of radical leaves ; by the anthodes being smaller, and the inner phyllaries broader and not paler at the margins ; by the pedicels being more slender, with more numerous bracts passing gradually into phyllaries. The leaves are generally more hairy ; the lowest ones are less distinctly petiolate, and the uppermost ones more acuminate than in *H. Gothicum*, and the styles much darker in colour.

From all the succeeding species it may be known by even the uppermost leaves not being amplexicaul or semi-amplexicaul, the phyllaries not paler towards the margins, and the achenes darker in colour. Mr. Backhouse, however, mentions a plant found near Clova, referred by Fries to this species, which has amplexicaul leaves and greener periclinal margins narrowed towards the base, which, if it really belong to *H. boreale*, would show that less reliance is to be placed on these characters than is usually supposed to be due to them ; but I have never seen a specimen which would at all answer to this description.

Fries now considers *H. virescens* (Sonder) not distinct from *H. boreale*.

Broad-leaved Hawkweed.

German, *Nordisches Habichtskraut*.

GROUP C.—FOLIOSA.

Stem leafy, without a basal rosette, corymbosely or paniculato-corymbosely branched at the apex. Lower stem-leaves narrowed at the base; middle ones sessile or semi-amplexicaul; uppermost ones amplexicaul or semi-amplexicaul or sessile; all paler and frequently slightly glaucous beneath, with the network formed by the ultimate veins more or less conspicuous. Phyllaries numerous, imbricated in several rows, dark, with pale margins, sparingly hairy, sometimes with a few gland-tipped hairs, none of them squarrose at the points. Achenes chestnut when ripe.

SPECIES XXXII.—**HIERACIUM CORYMBOSUM.** *Fries.*

PLATE DCCCLV.

Bab. Man. Brit. Bot. ed. v. p. 208. Fries, Epic. p. 123.

H. rigidum, Back. Mon. Hier. p. 76. Hook. & Arn. Brit. Fl. ed. viii. p. 322 (non Hartm.).

Stem very leafy, corymbosely or paniculato-corymbosely branched at the apex, sub-glabrous, or sparingly clothed with woolly hairs below and a little stellate down above; peduncles rather densely clothed with stellate down, but with few or no gland-tipped hairs. Leaves dispersed over the whole stem; the lowest ones oblanceolate, narrowed towards the base, sub-petiolate, with very short broadly-winged petioles; intermediate ones rhomboidal-elliptical or -oval-elliptical, attenuated towards the base, semi-amplexicaul or sessile, acuminate; uppermost ones lanceolate or ovate-lanceolate, rounded and semi-amplexicaul at the base, acuminate or attenuated towards the apex; all more or less strongly serrate-dentate in the middle with the teeth rather remote and very acute, glabrous above, pale and slightly glaucous beneath, with the network formed by the ultimate veins rather conspicuous, sub-glabrous, frequently with distant short hairs on the veins and margins. Anthodes moderately large, numerous, in a compound corymb or short panicle terminated by a corymb, with rather slender spreading-ascending peduncles generally furnished with a few minute bracts which usually do not pass gradually into the outer phyllaries. Pericline hemispherical at the base; phyllaries rather numerous, obtuse, the inner ones much broader than the others, dark-olive with paler margins; all sparingly sprinkled along the middle line with short whitish hairs and a few gland-tipped

ones, frequently finely and very shortly ciliated on the margins. Ligules glabrous, not ciliated at the apex. Styles livid. Achenes chestnut.

By the banks of streams in mountainous districts. Upper Teesdale; Clova; banks of Clunie, at Castleton of Braemar; Kingussee, Inverness-shire; banks of Loch Tay, Perthshire; Glen Ariff, county Antrim.

England, Scotland, Ireland. Perennial. Autumn.

Stem stout, slightly flexuous, 1 to 4 feet high, generally reddish below. Leaves resembling those of *H. boreale*, but the upper ones decidedly clasping at the base, much more glabrous, slightly glaucous beneath, with much shorter hairs on the veins and margins, and with the ultimate veins more distinct. Peduncles more densely clothed with stellate hairs, and with fewer bracts which rarely become crowded, immediately below the anthodes pass gradually into phyllaries as in *H. boreale*. Anthodes larger, fewer, and in a more lax corymb, with the pedicels less upright; branches showing scarcely any disposition to a racemose arrangement beneath the terminal corymb. Pericline broader at the base and more conical after flowering; phyllaries with paler edges and rather more numerous hairs. Achenes paler. Pappus more tawny.

There are none of the other preceding species with which it can be confounded, but it certainly approaches very closely to the following species.

Corymbose Hawkweed.

SPECIES XXXIII.—**HIERACIUM CROCATUM.** *Fries.*

PLATE DCCCLVI.

Back. Mon. Hier. p. 74. *Bab. Man. Brit. Bot. ed. v.* p. 207. *Hook. & Arn. Brit. Fl. ed. viii.* p. 231. *Fries, Epic.* p. 124.

"*H. inuloides, Tausch.*" *Bab. Man. Brit. Bot. ed. ii.* p. 198.

Stem very leafy, corymbosely or paniculato-corymbosely branched at the apex, sub-glabrous, frequently clothed with soft woolly hairs on the lower part and with a very little stellate down in the upper, and rather densely stellately-downy on the peduncles, but with few or no gland-tipped hairs. Leaves distributed over the whole stem, the lower ones narrowly oblanceolate, attenuated into indistinct winged petioles; intermediate ones narrowly oblong-elliptical, rounded and semi-amplexicaul at the base, very gradually attenuated towards the apex and sub-acute; uppermost ones lanceolate, rounded and semi-amplexicaul at the base, attenuated and acute at the apex; all more or less serrate-denticulate in the middle with the teeth remote and frequently

reduced merely to callous points, sub-glabrous above, pale and slightly glaucous beneath, with the network formed by the ultimate veins indistinct, sparingly hairy on the veins and margins with the hairs rather stout and moderately long. Anthodes rather large, numerous or few, in a corymb or short panicle terminated by a corymb, with rather slender spreading-ascending peduncles generally furnished with a few minute bracts which usually do not pass gradually into the outer phyllaries. Pericline hemispherical at the base; phyllaries numerous, very obtuse, the inner ones broader than the others, dark-olive with paler margins; all sparingly clothed, especially along the middle line, with short black-based whitish hairs rarely intermixed with gland-tipped ones, sometimes finely and very shortly ciliated towards the apex when young. Ligules glabrous, not ciliated at the apex. Styles yellow. Achenes chestnut.

By the banks of streams and ravines in mountainous districts. Teesdale; Glen Esk, Forfarshire; side of Loch Tay, Perthshire; Corby Den, Kingcausie, Kincardineshire; Glen Clunie, Braemar; Antrim and Connemara, Ireland.

England, Scotland, Ireland. Perennial. Autumn.

Very closely allied to *H. corymbosum*, but a smaller plant, usually 1 to 3 feet high, with the stem more hairy in the lower half; the leaves narrower and more parallel-sided, more amplexicaul, less strongly toothed, with the reticulation less evident below. The hairs are stronger and more numerous than in *H. corymbosum*; the anthodes larger, fewer, and not in a large compound corymb; the phyllaries less attenuated towards the apex, sooner becoming glabrous at the margins; the styles less livid; the achenes paler; and the pappus less tinged with brown.

Saffron Hawkweed.

SPECIES XXXIV.—**HIERACIUM STRICTUM.** *Fries.*

PLATES DCCCLVII. DCCCLVIII.

Bark. Mon. Hier. p. 71. *Bab. Man. Brit. Bot.* ed. v. p. 207. *Hook. & Arn. Brit. Fl.* ed. viii. p. 230. *Fries, Epic.* 121.

H. denticulatum, Sm. Eng. Bot. No. 2122.

Stem very leafy, corymbosely or paniculato-corymbosely branched at the apex, sub-glabrous or with scattered woolly hairs; peduncles sparingly clothed with stellate down intermingled with black-based hairs, but with few or no gland-tipped hairs. Leaves distributed over the whole stem, the lower ones oblanceo-

late or obovate, attenuated into more or less distinct petioles; intermediate one narrowly oblong-elliptical or oval-oblong, rounded and sub-semiamplexicaul at the base, gradually attenuated and acute at the apex; uppermost ones lanceolate or ovate, rounded but scarcely amplexicaul at the base, acuminate and attenuated at the apex; all more or less denticulate with the teeth remote and frequently reduced merely to callous points, sub-glabrous above, pale and glaucous beneath, with the network formed by the ultimate veins rather indistinct, sparingly hairy on the veins and margins, with the hairs rather stiff and moderately long. Anthodes moderately large, rather few, in a corymb or short panicle terminated by a corymb, with rather slender ascending straight peduncles generally furnished with a few minute bracts, which do not pass gradually into the outer phyllaries. Pericline truncate at the base; phyllaries rather numerous, sub-obtuse, the inner ones rather broader and more obtuse than the others, with paler margins; all dark-olive, sparingly clothed, especially along the middle line, with black-based and a few black gland-tipped hairs, generally finely and very shortly ciliated on the margins when young. Ligules slightly ciliated at the apex. Styles livid-yellow. Achenes chestnut.

By the banks of streams and in ravines in mountainous districts. In the Lake district; Western Yorkshire; Inverarnan and Arroquhar, Dumbartonshire; Oban, Argyleshire; Fall of Foyers, Inverness-shire; Glen Devon, in the Ochills, and near Lochy Bridge, Breadalbane, Perthshire; Lethens Den, Fife; co. Derry; Garron Head, co. Antrim; co. Wicklow.

England, Scotland, Ireland. Perennial. Autumn.

This species I have never gathered, and am very imperfectly acquainted with. The few specimens of it which I have seen present considerable difference in the breadth of the leaves; examples from the Ochills having them as broad as those of *H. corymbosum* or *H. boreale*; but in the Wensleydale specimens they closely resemble those of *H. crocatum*. The intermediate leaves of both forms are more amplexicaul and much less strongly toothed than in *H. boreale*, besides being glaucous beneath; the peduncles are stiffer and have rarely the bracts passing insensibly into phyllaries, as in that plant; the anthodes are fewer, and the phyllaries have pale margins, and are rarely destitute of at least a few gland-tipped hairs.

From *H. crocatum* it may be known by the leaves being less strongly toothed, less amplexicaul, the upper ones scarcely at all

so, and more acuminate, beginning to taper immediately above the broad rounded base; the anthodes considerably smaller; the peduncles more erect, generally with less stellate down; the phyllaries rather narrower and less obtuse.

From *H. corymbosum* it differs in the leaves being thinner, less strongly toothed, rather less amplexicaul, more hairy, and not so numerous; the anthodes smaller, much less numerous, and not in a large compound corymb, on longer and thicker and much more erect peduncles, with less stellate down and short black hairs; the phyllaries rather more acute, with more numerous gland-tipped hairs, and in the florets not being quite glabrous at the tip when in bud; but the ciliation of the ligules and the colour of the styles, I believe to be characters of very little importance.

Straight-branched Hawkweed.

GROUP D.—PRENANTHOIDEA.

Stem leafy, without a basal rosette, corymbosely or paniculato-corymbosely branched at the apex. Lower leaves narrowed towards the base; middle and upper ones amplexicaul with rounded auricles, glaucous and reticulate beneath, from the ultimate veins being apparent. Phyllaries few, imperfectly in 2 series; those of the outer series very few, unequal; all dark-olive, and thickly clothed with gland-tipped hairs; the inner ones with pale margins; none of them squarrose at the points. Achenes rather small, pale reddish-brown when ripe.

SPECIES XXXV.—*HIERACIUM PRENANTHOIDES*.

Vill.

PLATE DCCCLVIII.

Back. Mon. Hier. p. 69. *Bab.* Man. Brit. Bot. ed. v. p. 207. *Hook. & Arn.* Brit. Fl. ed. viii. p. 230.

Stem very leafy, corymbosely or subpaniculato-corymbosely branched at the apex, sub-glabrous or sparingly hairy below, with black-based hairs above; peduncles clothed with stellate down and very numerous gland-tipped hairs. Leaves distributed over the whole stem; the lower ones oblanceolate, narrowed at the base or sub-petiolate with indistinct shortly-winged petioles; intermediate ones elliptical-oblong sub-panduriform, amplexicaul with rounded auricles, acute; uppermost ones lanceolate or ovate-lanceolate, amplexicaul with rounded auricles, acuminate; all sub-entire or denticulate in the middle, with the teeth remote and

rarely more than callous points, sub-glabrous above or with very short hairs, glaucous beneath, with the network formed by the ultimate veins very distinct, generally with moderately long hairs on the veins and margins, and sometimes with distant short hairs all over the lower surface. Anthodes small, numerous, in a compound corymb or short panicle terminated by a corymb, with slender very short diverging pedicels, which are mostly destitute of small bracts, except one or two beneath the anthode. Pericline ovate at the base; phyllaries few, in 2 irregular series; the outer ones very few and short, rather lax, sub-acute, concolorous; the inner ones obtuse, with paler margins; all blackish-olive, with numerous short black and gland-tipped hairs, and a little stellate down. Ligules ciliated at the apex. Styles livid-yellow. Achenes small, pale reddish-brown.

On the margins of streams and woody ravines. Not uncommon in sub-alpine districts. In Teesdale and Western Yorkshire; Cheviots and Pentlands, in the South of Scotland; Clova, Braemar, and Breadalbane, in the North.

England, Scotland, Ireland. Perennial. Autumn.

Stem erect, rather stout, 1 to 3 feet high, generally purplish below, with the leaves rather thinly scattered over the whole stem, but many of those on the lower part of it generally withered by the time of flowering; the lower ones narrowed at the base, but they can seldom be called distinctly petiolate; those in the middle third of the stem enlarged and clasping at the base, then slightly contracted, attaining their greatest width beyond the middle, from whence they taper gradually to the apex, so that they present somewhat the shape of the sole of a shoe; generally with remote callous points on the margin, more rarely with distinct teeth, beautifully reticulated on the under surface, which is decidedly glaucous. Anthodes small, about the size of those of *H. murorum*; and, as in that plant, the pedicels and phyllaries are thickly clothed with black gland-tipped hairs.

H. prenanthoides cannot well be confounded with any of the preceding species; it has the leaves more amplexicaul than in any of them; and, besides the small size of the anthodes, the phyllaries are reduced to one row, with a few shorter ones on the outside, and, as well as the peduncles, clothed with numerous gland-tipped hairs.

Rough-leaved Hawkweed.

French, *Epervière à Feuilles de Préanthe*.

SPECIES XXXVI.—**HIERACIUM BORRERI.**

PLATE DCCCLIX.

H. denticulatum, *Borrer*, MS. (non *Sm.* Eng. Bot. nec Herb.).

Stem leafy, corymbosely or subpaniculato-corymbosely branched at the apex, sparingly woolly below, and with black gland-tipped hairs above; peduncles sparingly clothed with stellate down and rather thickly with black gland-tipped hairs. Leaves sparingly distributed over the stem up to the inflorescence; the lower ones oval, rather abruptly contracted into slender distinct petioles; intermediate ones regularly oval, narrowed at each end, amplexicaul at the base, with rounded auricles, acute; uppermost ones ovate or ovate-lanceolate, amplexicaul, sub-acuminate; all sub-entire, or denticulate in the middle with the teeth remote and often reduced merely to callous points, green, sub-glabrous or with short hairs above, glaucous beneath, with the network formed by the ultimate veins very distinct, with moderately long hairs on the veins and margins, and sometimes with distant short hairs all over the lower surface. Anthodes very small, rather numerous, in a corymb, or very short panicle terminated by a corymb, with slender short diverging pedicels, which are usually furnished with a few bracts beneath the anthode. Pericline ob-conical at the base; phyllaries few, in two irregular series; the outer ones very few, short, lax, subacute; the inner ones with pale margins, subacute; all blackish-olive, thickly clothed with short black hairs and gland-tipped hairs, and a little stellate down. Ligules ciliated at the apex. Styles yellow. Achenes pale reddish-brown.

In Marehead Wood, near Selkirk (Dickson); but it has not been found since his time.

Scotland? Perennial. Late Summer.

This plant is certainly very nearly allied to *H. prenanthoides*; but in cultivation alongside of it *H. Borreri* appears much more slender, the stems 12 to 18 inches high, with fewer leaves, and these decreasing rapidly in size upwards from a little below the first branches of the inflorescence. The leaves are much broader, and of a more regularly oval figure; the lowest ones abruptly contracted into the petiole, not gradually, as in *H. prenanthoides*; those in the middle of the stem not contracted immediately above the base, but gradually enlarging to the middle, and again narrowing to the point, with a regular curve throughout; uppermost leaves with the broadest part not so immediately above the base, so that they are

less triangular in form. Anthodes smaller and fewer. Phyllaries paler, narrower, and more acute; the outer ones rather longer in proportion, and somewhat recurved.

This is not *H. denticulatum* of Smith's Herbarium, nor of "English Botany;" both the specimen and the figure belong to *H. strictum*. It can scarcely be that of Griesbach, as (judging from the plate in Reichenbach's "Icones Floræ Germ. et Helv." Vol. XIX. Tab. MDXIII. Fig. 2) that has the lower leaves gradually narrowed, and not distinctly petiolate; and is certainly distinct, if Reich. *l.c.* Tab. MDXLV. can be referred to *H. denticulatum*, *Griesb.*

The only wild specimen I have seen which could be referred to *H. Borreri* is one in Smith's Herbarium from Switzerland, named *H. cydonifolium*; but it is not the plant so named by Villars, because it is not glandular-hairy all over.

The history of *H. Borreri* is by no means satisfactory in proving that it has occurred in Britain. Mr. H. C. Watson received the living plant from Mr. Borrer, who got it from Mr. E. Forster's garden, with the information that he had it from Dickson, who found it in Harehead Wood. Smith mentions this station under his *H. denticulatum*, but there are no specimens of it in his Herbarium. It is greatly to be wished that some botanist would explore Harehead Wood, to see if this plant really exists there, as it is quite possible that the plant found by Dickson may not have been the same as that received by Mr. Borrer from Forster.

SUB-ORDER IV.—AMBROSIACÆ.*

Anthodes monœcious; the male consisting of numerous florets surrounded by distinct or united phyllaries; the female of one or two florets included in an involucre, with the phyllaries united and hardening over the fruit, so as to give it the appearance of a nut. Corolla tubular in the male flowers, generally absent in the female. Anthers not united into a ring.

Small-toothed Hawkweed.

GENUS XLII.—*XANTHIUM*. *Tournef.*

Anthodes monœcious, homogamous. Male anthodes many-flowered; pericline sub-globose, of free phyllaries in a single series; clinanth with paleæ; florets with the corolla clavate,

* This appears to be properly a group of the sub-order *Corymbiferae*; but, as all the connecting links are wanting in the British Flora, it is here removed from the place which it ought to occupy in a general Flora.

5-toothed; anthers free, without tails; ovary abortive; stigmas 2, united. Female anthodes 2-flowered; pericline ovoid, with the phyllaries united; corolla tubular-filiform; stamens none; stigmas 2, diverging; achenes compressed, each included in a chamber of the 2-celled pericline; pericline indurated in fruit, terminated by two beaks, and with the surface covered with hooked spines.

Branched annuals, with the male anthodes terminal, the female ones beneath.

SPECIES I.—**XANTHIUM STRUMARIUM.** *Linn.*

PLATE DCCCLX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1922.

Reich. Ic. Fl. Germ. et Helv. Vol. XIX. Tab. MDLXXVI. Fig. 2.

Leaves sub-cordate, 3-lobed, with the lobes again lobed, and crenate or dentate. Fruiting pericline with hooked spines, except at the apex, which is unarmed, and terminates in two straight beaks.

Rare, and not even naturalized, but occurring from time to time in waste places and about dunghills, principally within the metropolitan district. It has occurred in the counties of Dorset, Hants, Kent, Surrey, Middlesex, and Northumberland. I have found it on the mud dredged from the Thames, and laid on Battersea Fields during the formation of Battersea Park.

[England.] Annual. Autumn.

Stem erect, branched, furrowed, solid, puberulent, not spinous, 1 to 2 feet high. Leaves palmately-nerved, stalked, 2 to 4 inches across, somewhat resembling those of a vine in shape, rough with short hairs. Male flowers in anthodes about the size of currants, arranged in terminal sub-spicate leafless racemes or panicles; the female ones beneath, subsessile, in axillary fascicles. Pericline in fruit erect, about the size of a cherrystone, covered all over with stout hooked spines, and finely pubescent. Leaves rough, dull-green.

Common Bur-Marygold.

*EXCLUDED SPECIES.***CARDUUS OLERACEUS.** *Pers.*

Gathered as wild in Lincolnshire, by the late Mr. Cole, of Bourne, about 1823. The plant was then to be observed by the side of the road between Market Deeping and Crowland (Mr. Edwards, in "Phyt." Ser. I. Vol. III. p. 115).

CARLINA RACEMOSA. *Linn.*

A single specimen gathered in the Isle of Arran, Galway, by Mr. W. Andrews.

ARCTIUM TOMENTOSUM. *Pers.*

Professor Babington now considers that examples of *A. majus* have been mistaken for this species in Britain; it is, however, not improbable that the true plant may yet be found in this country.

CENTAUREA SALAMANTICA. *Linn.*

Found by Mr. Piquet at St. Ouen's Bay, Jersey. Mr. Baker refers it to *C. (Microlonchus) Clusii*, *Gay*. I have not seen specimens.

CENTAUREA PANICULATA. *Linn.*

Found by Mr. Piquet at St. Ouen's Bay, Jersey; but I have not seen specimens.

CENTAUREA LEUCOPHÆA. *Jord.*

Found by Mr. Piquet at St. Ouen's Bay, Jersey. I have not seen specimens. This and the two preceding species have been probably accidentally introduced, and do not appear to have become permanently established.

CENTAUREA KOTSCHYANA. *Koch.*

Professor Babington suggests that a plant found at "Carnuctie, Fife," may belong to this species. I have a specimen of this from the Rev. W. W. Newbould, and it appears to be not *C. Kotschyana*, but a form of *C. Scabiosa* with larger appendages nearly concealing

the phyllaries. I cannot hear of any place called "Carnuctie"—it may be Carnock, Fife, or perhaps Carnoustie, Forfar.

CENTAUREA MONTANA. *Linn.*

Has occurred near Gradbitch, Stafford, and near Richmond, York; but apparently not sufficiently well established to warrant its introduction into the list of British species.

CENTAUREA INTYBACEA. *Linn.*

Said to occur in Forfarshire by Mr. G. Don—no doubt a pale-flowered variety of *C. Scabiosa* has been mistaken for this plant, as suggested by Mr. H. C. Watson.

CALENDULA ARVENSIS. *Linn.*

Formerly found on Sunderland Ballast-hills, but not observed there recently.

CALENDULA OFFICINALIS. *Linn.*

The common marygold is often to be found in waste places where garden rubbish has been deposited, but does not establish itself.

CHRYSANTHEMUM MACROPHYLLUM.

Walst. & Kil.

This species (*Pyrethrum macrophyllum*, Willd.) I have seen on Wimbledon Common, but no doubt the outcast of a garden. I do not know if it still exists there, as I have not been at the spot since 1860.

ANACYCLUS RADIATUS. *Lois.*

Found by Mr. W. Wilson at Dantry Quay, Bearhaven, Cork. No doubt introduced with ballast.

ARTEMISIA CÆRULESCENS. *Linn.*

Eng. Bot. No. 2426.

Said by Gerarde to be found in his time near Portsmouth, Rye, and Winchelsea; on the coast of Brading Harbour, near Broadstone (Mr. W. D. Snooke); and near Boston, Lincolnshire, by Tofield, on the authority of Hudson. No British specimens exist; and it is more than probable that some form of *A. maritima* had been mistaken for it.

SENECIO ERRATICUS. *Bertol.*

Reported from the Channel Islands and Shropshire, but by mistaking *S. aquaticus* for this species

ASTER.

Various species of *Aster* from North America occasionally occur as the outcasts of gardens where they are cultivated, under the name of Michaelmas daisy. Among these I have seen *A. brumalis* (Nees), *A. Novi-belgii* (Linn.), and *A. leucanthemus* (Desf.).

SOLIDAGO LANCEOLATA. *Linn.*

Dr. Walker Arnott states that this North American species is sometimes found "naturalized;" but I have never seen it.

TUSSILAGO ALPINA. *Linn.*

Said by Mr. G. Don to have been found in Forfarshire; but it has been found by no one else; it is the *Homogyne alpina* of Cassini and most of the continental botanists.

PICRIS STRICTA. *Jord.*

This plant (which appears to be a sub-species of *P. hieracioides*) was found in Buntingford, Herts, by the Rev. W. W. Newbould; but probably it has been introduced with seed from the Continent.

PRENANTHES PURPUREA. *Linn.*

Partially naturalized near the Castle, Isle of Skye. I have seen it about 1839 on the *débris* of Salisbury Craigs, Edinburgh, but it was not persistent there.

CREPIS PULCHRA. *Linn.*

Eng. Bot. No. 2325.

Mr. G. Don said that he found this plant among the *débris* of the rocks of the hills of Turin and Pitsandy, in Forfarshire. Dr. Walker Arnott remarks in the "British Flora," "The very few specimens from Don, which we have seen, are more luxuriant than Smith's acknowledged cultivated one, from which the figure in 'English Botany' was made."

HIERACIUM STOLONIFERUM. *Waldst. & Kil.*

Eng. Bot. No. 2332.

H. dubium, *Sm. Eng. Bot. l. c.*

Figured in "English Botany" from specimens from the Cambridge Botanic Gardens, said to have been sent from Scotland.

HIERACIUM AURICULA. *Linn.**H. dubium*, *Sm. Eng. Fl. Vol. III. p. 356.*

Said to have been found somewhere in Westmoreland or Cumberland.

HIERACIUM DUBIUM. *Linn.*

Said to have been found on Fairfield Mountain, near Rydal, Westmoreland, according to Hudson; and at Coxbeach Wood, Derbyshire.

HIERACIUM GLACIALE. *Lachn.*

Eng. Bot. No. 2368.

H. Auricula, *Sm. Eng. Bot. l. c.*

Figured by Smith from a Mount Cenis specimen, under the belief that it was *H. Auricula*.

HIERACIUM CERINTHOIDES. *Linn.*

Eng. Bot. No. 2378.

Said by Smith to have been sent from the Highlands of Scotland by Mr. G. Don. The figure is from a cultivated specimen, and no doubt the plant which Don saw wild and believed to be the same, was *H. Anglicum*, var. β .

HIERACIUM SAXIFRAGUM. *Fr.*

Said by Fries, in his "Epicrisis" (p. 87), to occur in Scotland, near Edinburgh: not known to occur there by British botanists.

HIERACIUM OREADES. *Fr.*

Formerly regarded as British by Fries, on the authority of Dillenius; but Mr. Backhouse believes the Gordale plant was *H. pallidum*.

HIERACIUM PLUMBEUM. *Fr.*

Formerly regarded as British by Fries, but no locality is known for it.

HIERACIUM DOVRENSE. *Fr.*

Stated by Fries (*Symb. Hier.*, p. 129) to have been found in Scotland, but not known by British botanists to exist there.

HIERACIUM RIGIDUM. *Hartm.*

Said to occur in Scotland by Fries; but the plant he supposed to be that is, according to Mr. Backhouse, a form of *H. corymbosum*.

XANTHIUM SPINOSUM. *Linn.*

Dr. H. Bull and Mr. G. S. Wintle have both sent me this plant from Hereford, where it appeared in abundance on ground on which mud from the streets of the town had been laid. It is too tender to have any chance of becoming permanently naturalized in Britain. Dr. Bull informs me that it has also occurred in Wales.

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ENGLISH BOTANY.

ILLUSTRATIONS.











E. B. 1112.

Carduus nutans. Musk Thistle.





Carduus nutanti-crispus. Hybrid between Musk and Watted Thistles.









Carduus tuberosus. Tuberous Thistle.

*Carduus pratensis.*

Meadow Thistle.



Carduus heterophyllus. Melancholy Thistle.





Carduus acaulis. Dwarf Thistle. Caulescent state.





Carduus arvensis, var. *setosus*. Creeping Thistle, var. β .



Carduus pratensi-palustris. Hybrid between Marsh and Meadow Thistles.



Carduus acauli-pratensis. Hybrid between Dwarf and Meadow Thistles.

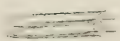
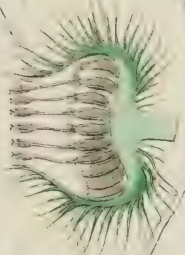


Carduus acauli-arvensis. Hybrid between Dwarf and Creeping Thistles.



Carlina vulgaris. Carline Thistle.





Arctium majus. Greater Burdock.





Arctium intermedium. Intermediate Barlock.





Arctium nemorosum. Narrow-leaved Burdock.





Arcium eu-minus. Lesser Burdock.

*Saussurea alpina.*

Alpine Saussurea.



Serratula tinctoria. Common Saw-wort.



Serratula tinctoria, var. *monticola*

Common Saw-wort, var. β .



*Centaurea nigra*, var. *genuina*.Black Knapweed, var. *a*.



Centaurea nigra, var. *decipiens*. Black Knapweed, var. β .

*Centaurea Scabiosa.*

Greater Knapweed.

*Centaurea Cyanus.*

Blue-bottle.



Centaurea aspera. Rough Star-thistle.

















E. B. 979.

Chrysanthemum inodorum, var. *maritimum*. Scentless Mayweed, var. *μ*.







*Anthemis arvensis*, var. *genuina*.Corn Chamomile, var. *a*.



B. 2370.

Anthemis arvensis, var. *anglica*.Corn Chamomile, var. β .





Anthemis nobilis. Common Chamomile.





E. B. 2532.

Achillea tomentosa.

Woolly Yellow Yarrow.



Achillea Millefolium. Common Yarrow.



Achillea tanacetifolia. Tansy-leaved Yarrow.



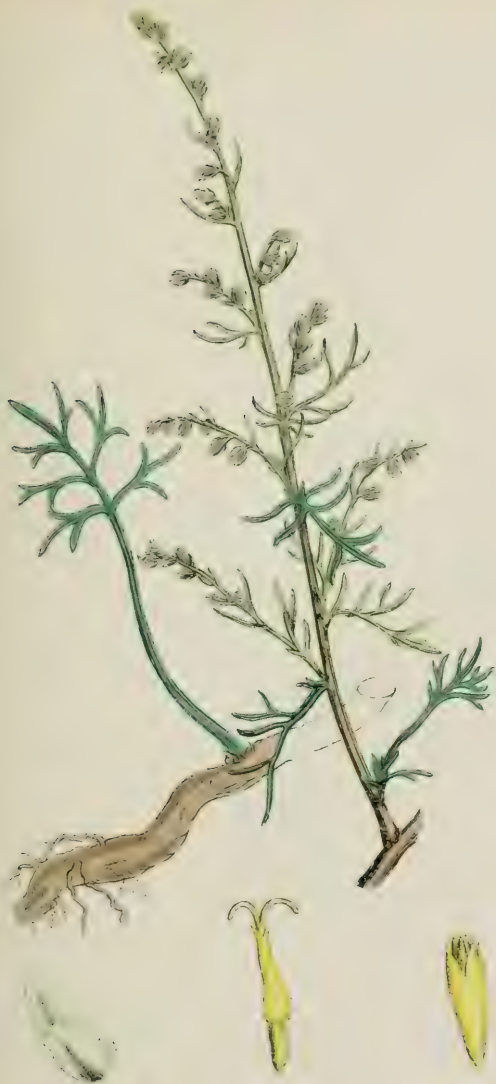


Achillea Ptarmica. Sneeze-wort Yarrow.

*Artemisia Absinthium.*

Common Wormwood.







B. 1706.

Artemisia maritima, var. *genuina*.Sea Wormwood, var. *a*.



E. B. 1001.

Artemisia maritima, var. *gallica*.

Sea Wormwood, var. β .







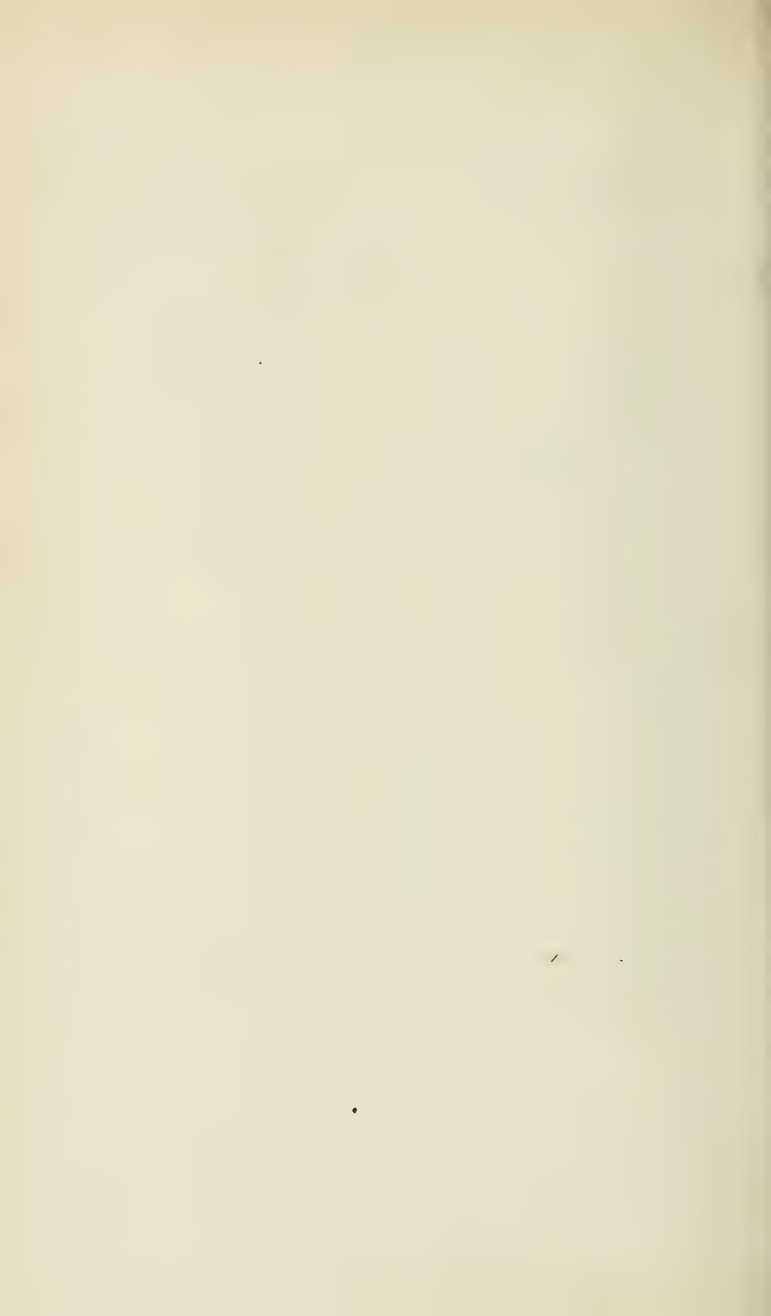
E. S. 2097.

Filago spathulata. Spathulate Cudweed,

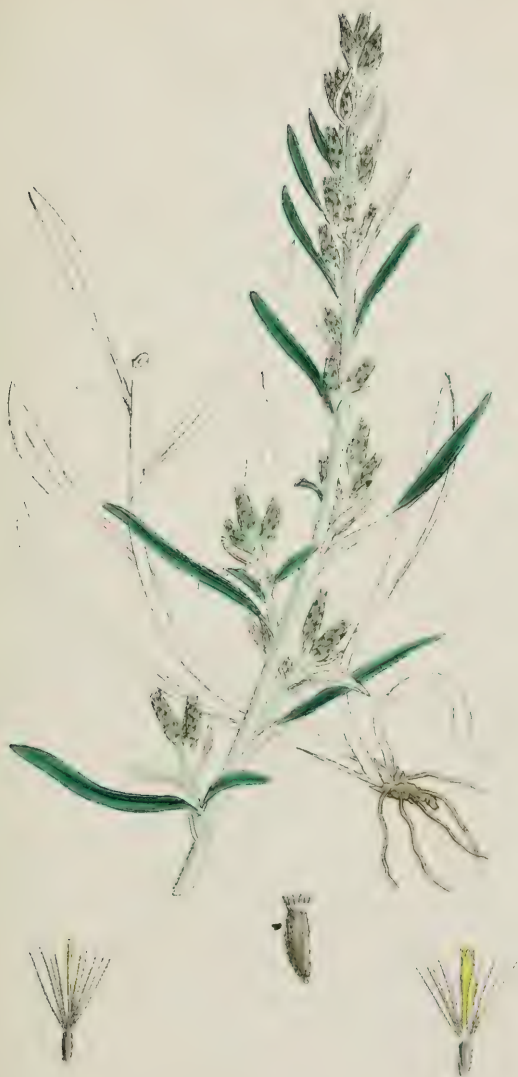






















S. 2640

Gnaphalium dioicum, var. *hyperboreum*. Mountain Everlasting, var. β .









Sarcocolla viscosa. Stinking Groundsel.











*Senecio paludosus.*

Great Fen Ragwort.





Senecio campestris. Field Fleawort.



*Doronicum plantagineum.*

Plantain-leaved Leopard's-bane.



Bidens cernua, var. *genuina*.

Nodding Bur-Marygold, var. *a*.



E. B. 1113.

Bidens tripartita.

Tripartite Bur-Marygold.



Inula Helenium. Elecampane.



E.B. 1195.

Inula Conyza.

Ploughman's Spikenard.



Inula Salicina. Willow-leaved *Inula*.





E.B. 1115.

Inula dysenterica. Greater Fleabane.







E.B. 2019.

Erigeron Canadensis.

Canadian Fleabane.



E. B. 1158.

Erigeron acris.

Blue Fleabane.



E. B. 464 & 2416.

Erigeron alpinus.

Alpine Fleabane.





E. B. 2505.

Aster Linosyris. Goldlocks.



E.B. 301.

Solidago Virga-aurea. var. *genuina*.

Common Golden-rod, var. *a.*



Solidago Virga-aurea, var. *Cambrica*. Common Golden-rod, var. γ .





Petasites fragrans. Sweet-scented Coltsfoot.



Petasites albus. White Coltsfoot.









E. B. 539.

Cichorium Intybus. Wild Succory.







E.B. 575.

Hypochaeris glabra. Smooth Cat's-car.





E. B. 225.

Hypochaeris maculata. Spotted Cat's-ear.



E. B. 555.

Leontodon hirtus. Hairy Hawk-bit.





E.E. 830.

Leontodon autumnalis, var. *genuinus*.Autumnal Hawk-bit, var. *a*.



E. B. 1109.

Leontodon autumnalis, var. *pratensis*,

Autumnal Hawk-bit, var. β .





E. B. 972.

Helminthia echioides. Bristly Ox-tongue.

*Tragopogon pratensis*, var. *genuinus*.Yellow Goat's-beard, var. *a*.



Tragopogon pratensis, var. *minor*.

Yellow Goat's-beard, var. β .



E.B. 434.

Tragopogon pratensis, var. *grandiflorus*.

Yellow Goat's-beard, var. γ .





B. 510.

Taraxacum officinale, var. *genuinum*.Common Dandelion, var. *a*.



Taraxacum officinale, var. *erythrospermum*.

Common Dandelion, var. β .



Taraxacum officinale, var. *palustre*.

Common Dandelion, var. ̂.









E. A. 487.

Lactuca muralis. Ivy-leaved Lettuce



E. B. 2425.

Mulgedium alpinum.

Blue Sow-thistle.









E. B.S. 2765.

Sonchus asper. Rough Sow-thistle, form with undivided leaves.





E. B. S. 2766.

Sonchus asper. Rough Sow-thistle, form with pinnatifid leaves.







E. B. 935.

Sonchus palustris. Marsh Sow-thistle.



Crepis foetida. Stinking Hawk's-beard.





E.B.S. 2929.

Crepis taraxacifolia. Small Rough Hawk's-beard.

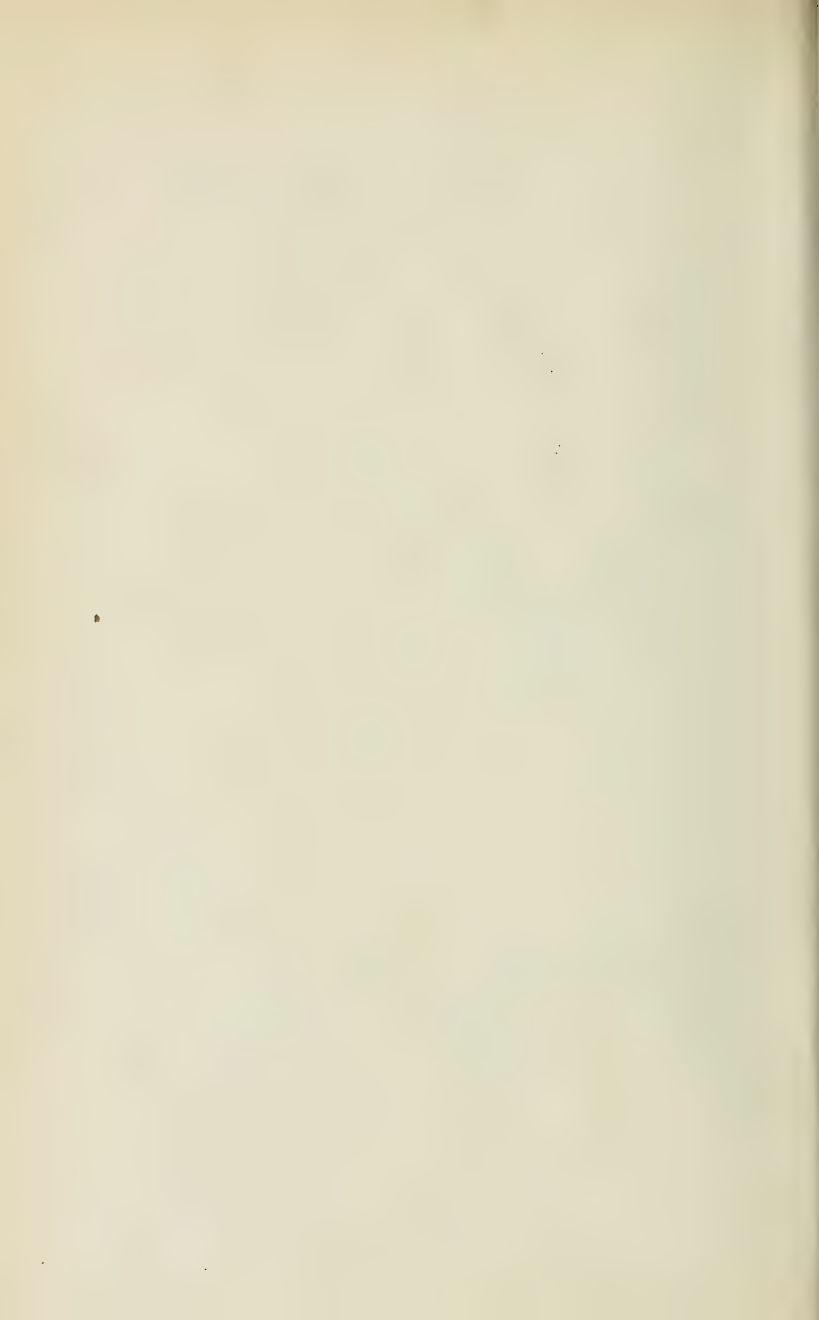




E. B. S. 2945.

Crepis setosa.

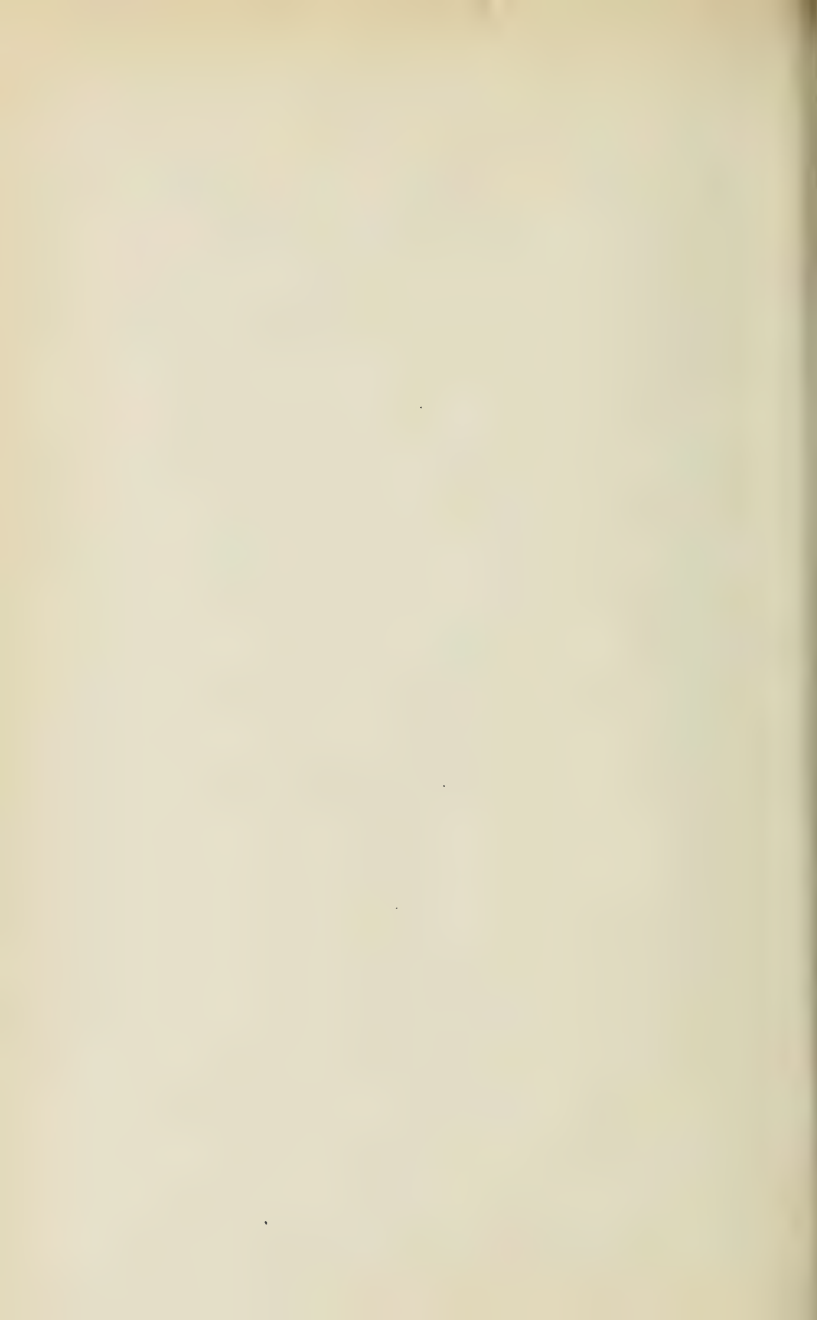
Bristly Hawk's-beard.





E. B. 1111.

Crepis virens. Smooth Hawk's-beard.



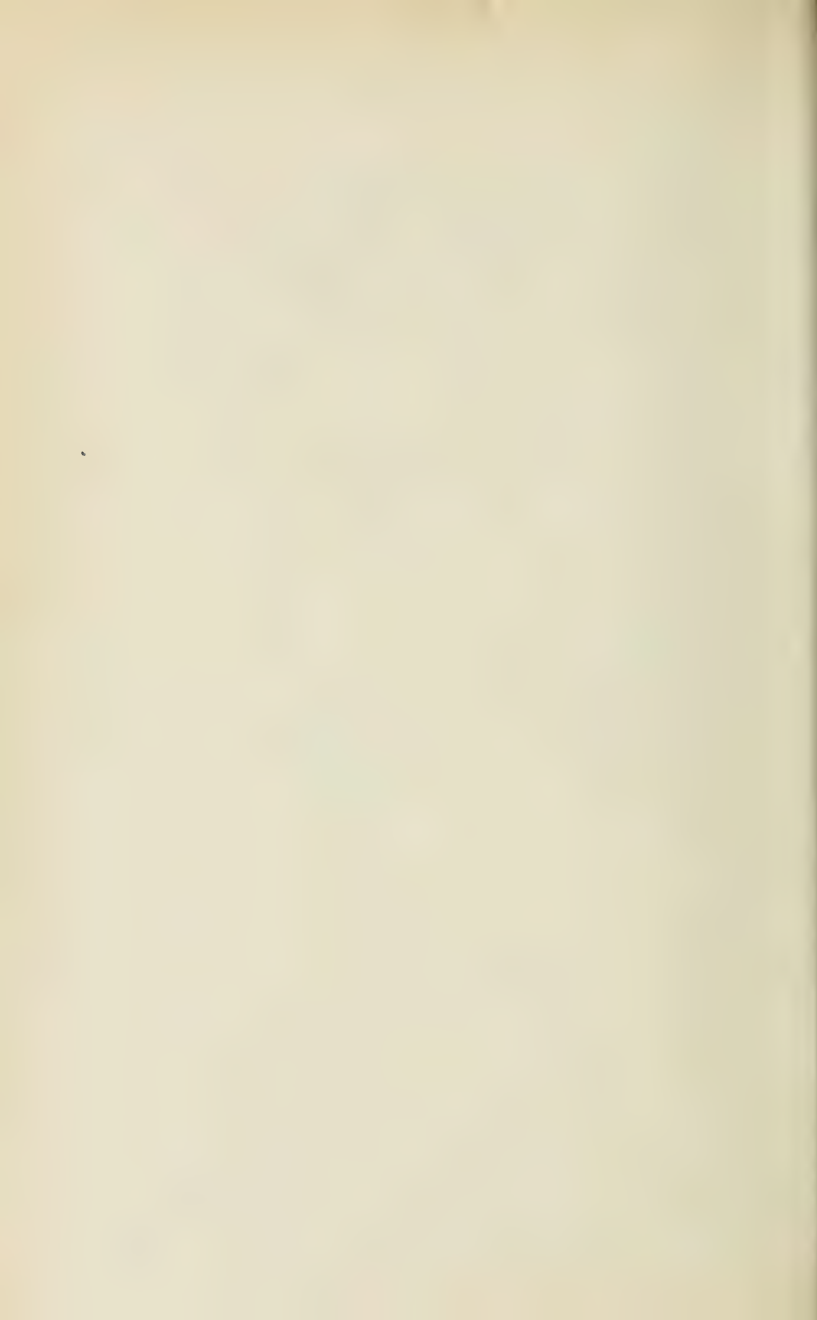




E. B. 2210.

Crepis succisifolia.

Scabious-leaved Hawk's-beard.













E.B 1469.

Hieracium aurantiacum.

Orange Hawkweed.





Hieracium calenduliflorum. Marygold-flowered Hawkweed





Hieracium eximium Grey-headed Hawkweed.







Hieracium melanocephalum, Alpine Hawkweed.





Hieracium gracilentum. Slender Hawkweed.



*Hieracium globosum.*

Globose-headed Hawkweed.



Hieracium chrysanthum, var. *genuinum*.

Golden-flowered Hawkweed, var. *a*.





Hieracium chrysanthum, var. *microcephalum*. Golden-flowered Hawkweed, var. β .

*Hieracium nigrescens.*

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*Hieracium senescens.*

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Lingulate-leaved Hawkweed.





B.S. 2690.

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Amplexicaul-leaved Hawkweed.



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English Hawkweed, var. *a.*



V. B. 2083.

Hieracium Anglicum, var. *decipiens*.English Hawkweed, var. β .





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E. B. 2235.

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Hieracium Borreri. Borrer's Hawkweed.



B. 2544.

Xanthium Strumarium.

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